274

PROPERTY OF
L. F. BLANKENSHIP.
3924 MEADE ST.
DENVER, COLORADO

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Admiral	4Z11, 4Z12, 4Z14, 4Z18, 4Z19 (Ch. 4Z1)	274-2
Altec-Lansing	A-339-A	274-3
Coronado	RA42-9850A	274-4
Crosley	Ch. 402, -1, -4, -5, 403, -1, 404, -1, -4, -5 Tel. Rec. Prod. Chg. Bul. 120	274-1
David Bogen	FM400A	274-5
Dewald	E-520	274-6
Emerson	806, 807	274-7
Emerson	811B (Ch. 120228-B), 822B (Ch. 120232-B)	274-8
General Electric	572, 573, 574, 575	274-9
Muntz	421T1, 421T1N, 421T2 (Ch. 47A4) Tel. Rec.	274-10
Packard-Bell	17101, U, 17104, U, 21102, U, 21201, U, 21204, U (Ch. T-10) Tel. Rec.	274-11
Stromberg-Carlson	AU-58	274-12
Sylvania	614B, GR, H, RE (Ch. 1-605-1)	274-13
Truetone	D2556A	274-14
Westinghouse	H-447T4, H-448T4, H-449T4 (Ch. V-2184-4)	274-15
Westinghouse	H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201) Tel. Rec.	274-16
Zenith	R623F, G, R, W, Y (Ch. 6R03)	274-17
Zenith	R2671E, EU, R, RU, R2975R, RU, R2976E, EU, R2979E, EU (Ch. 22R21, U) Tel. Rec.	274-18

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3924 MEADE ST.
DENVER, COLORADO

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 223

Several new models and chassis have been added to the group of models covered in Photofact Folder 5 — Set 223. A list of all models and the chassis used in each is given below:

MODEL	CHASSIS	MODEL	CHASSIS
F-17TOLBH	402	F-21COLU-1	404-5
F-17TOLBU,-1	402-1	F-21TOLBH	403
F-17TOLH	402	F-21TOLBU,-1	403-1
F-17TOLU,-1	402-1	F-21TOLH	403
F-17TOSBH	402-4	F-21TOLU,-1	403-1
F-17TOSBU	402-5	F-21TOSBH	404-4
F-17TOSH	402-4	F-21TOSBU	404-5
F-17TOSU	402-5	F-21TOSH	404-4
F-21CDLBH	404,-4	F-21TOSU	404-5
F-21CDLBU	404-1	GF-21CDLBH	404-4
F-21CDLBU-1	404-5	GF-21CDLH	404-4
F-21CDLH	404,-4	GF-21CDLU	404-5
F-21CDLU	404-1	GF-21CDMH	404-4
F-21CDLU-1	404-5	GF-21CDMU	404-5
F-21COLBH	404,-4	GF-21COBH	404-4
F-21COLBU	404-1	GF-21COBU	404-5
F-21COLBU-1	404-5	GF-21COMH	404-5
F-21COLH	404,-4	GF-21TOM	404-4
F-21COLU	404-1		

Ch. 402-4, -5, 404-4, -5

Ch. 402-4 and Ch. 404-4 are identical to Ch. 402 and 404, respectively, except a different VHF tuner (part #156189) is used. A schematic of this tuner is given in Fig. 1. Ch. 402-5 and 404-5 are identical to Ch. 402-1 and 404-1, except a different VHF tuner (part #156189) and UHF tuner (part #156930 is used. A schematic of theVHF tuner is given in Fig. 1 and the UHF tuner is given in Fig. 2.

In addition, when the cascode tuner (part #156189) is used the following changes were made in the video IF strip.

R20 was increased from 680Ω to 1000Ω.

A 100Ω resistor was added between the top of L14 and R18.

R32 was decreased from 5600Ω to 4700Ω.

R33 was decreased from 2.2Meg to 470KΩ.

R34 was decreased from 390KΩ to 220KΩ.

C41 was increased from .05MFD to .2MFD.

Ch. 402, -1, 403, 403-1, 404-1

TO IMPROVE CONTRAST

Pin 10 of V18 was disconnected from the junction of C4 and R6 and reconnected as shown in Fig. 3.

Chassis incorporating this change are coded as follows:

CHASSIS	CODE	CHASSIS	CODE
402,-1	B	403-1	B
403	C	404,-1	A

NOTE: In the 1954 21" TV receivers the focus is obtained magnetically and R9 is omitted.

NEW UHF TUNER

Chassis 402-1, Code E and later, and chassis 403-1, Code D and later, use a 2 tube UHF converter (part #156930). A schematic of this tuner is shown in Fig. 2.

CROSLEY CHASSIS 402, -1, -4, -5, 403, -1, 404, -1, -4, -5

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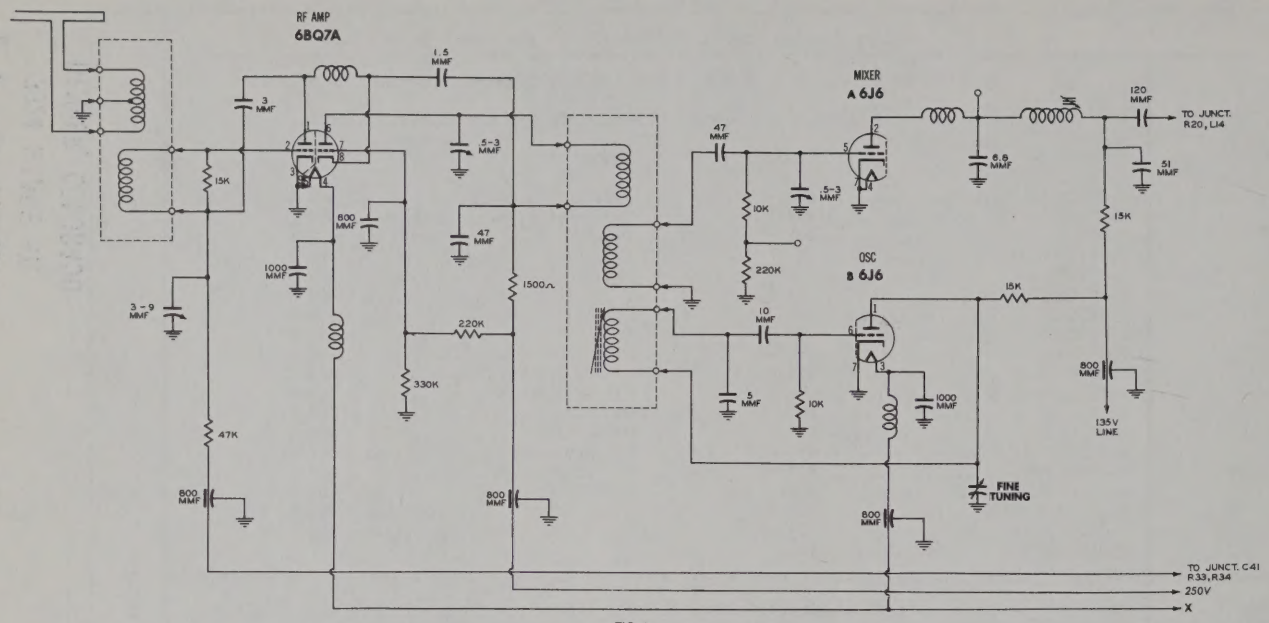

FIG. 1

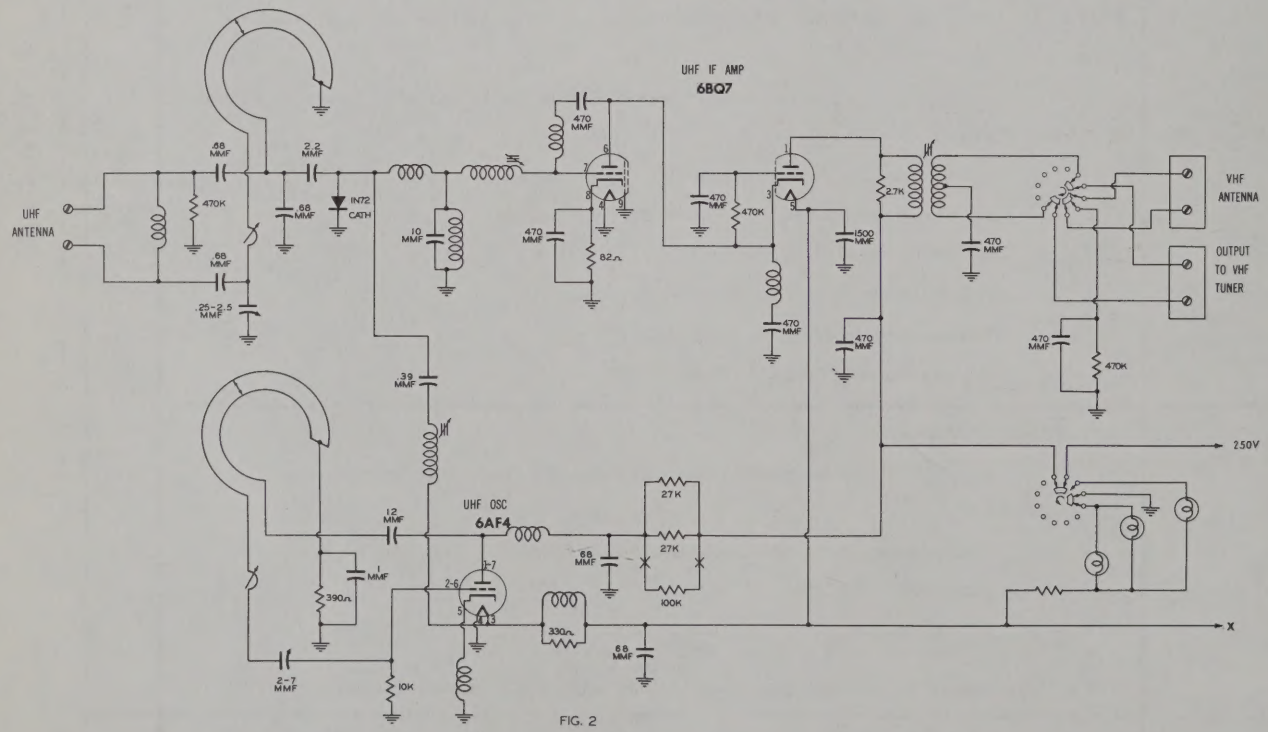

FIG. 2

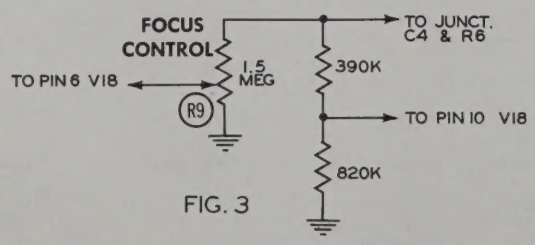

FIG. 3

Ch. 402-1, -4, -5
403, -1, 404

AUDIO CIRCUIT REVISED

R-C coupling is used in place of direct coupling between the AF amplifier and audio output stage in the following chassis.

CHASSIS	CODE	CHASSIS	CODE
402, -1	D	403-1	C
402-4, -5	A	404-1, -4	B
403	D	404-5	A

A partial schematic showning the revised audio circuit is given in Fig. 4.

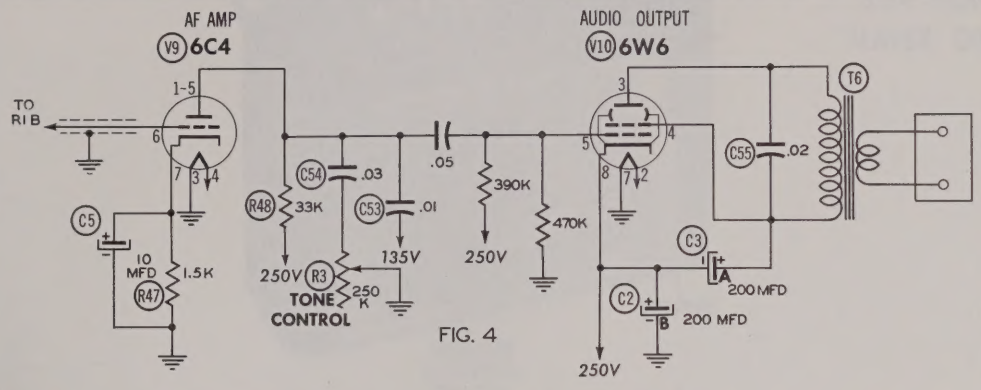

FIG. 4

Ch. 402, -1, -4, -5, 403, -1, 404-4, -5

TO IMPROVE VERTICAL SYNC STABILITY

R49 was changed from 470KΩ to 220KΩ in chassis coded as follows:

CHASSIS	CODE	CHASSIS	CODE
402	E	403	E
402-1	F	403-1	D
402-4	B	404-4	C
402-5	A	404-5	B

Ch. 403 (Code B)
Ch. 403-1 (Code A)

TO INCREASE HEIGHT

R82 in series with vertical linearity control has been reduced in chassis 403 (Code B) and chassis 403-1 (Code A). In some chassis this was accomplished by wiring a 33KΩ, 1 watt resistor in parallel with R82. In other chassis, R82 was replaced by a single 6800Ω, 5 watt resistor.

Ch. 402, -1, -4, -5, 403, 403-1, 404-1, 404-4, -5

COMPONENT CHANGE

The vertical linearity control, R5, (part #154088) was changed to part #155519, which is rated at $\frac{1}{2}$ watt.

R82 was replaced by two 15KΩ, 2 watt resistors wired in parallel.

In chassis 402-4, -5, 404-4, -5, R59 (4700Ω, 1/2 watt resistor) was disconnected from ground, and connected to the control arm of R5.

Chassis incorporating these changes are coded as follows:

CHASSIS	CODE	CHASSIS	CODE
402, -1	D	404-1	B
402-4, -5	A	404-4	B
403	D	404-5	A
403-1	C		

Ch. 402, -1, -4, -5, 403, -1, 404-1, -5

TO IMPROVE HORIZONTAL LINEARITY

In chassis 402, -1, -4, -5 the deflection yoke assembly was changed to part #157044-1.

In chassis 403, -1, 404-1, -5 the deflection yoke assembly was changed to part #157044-2.

In chassis 402, -1, -4, -5, 403, -1, 404-1, -5 the horizontal deflection transformer assembly was changed to part #175045-1.

C79 was increased from 560MMF to 5000MMF.

C82 was decreased from 120MMF to 100MMF.

R76 was increased from 330KΩ to 470KΩ.

Chassis incorporating these changes are coded as follows:

CHASSIS	CODE	CHASSIS	CODE
402	E	403-1	D
402-1	F	404-1	C
402-4	B	404-4	C
402-5	A	404-5	B
403	E		

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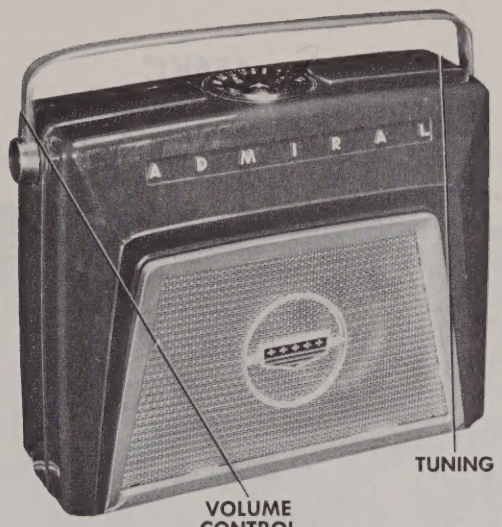
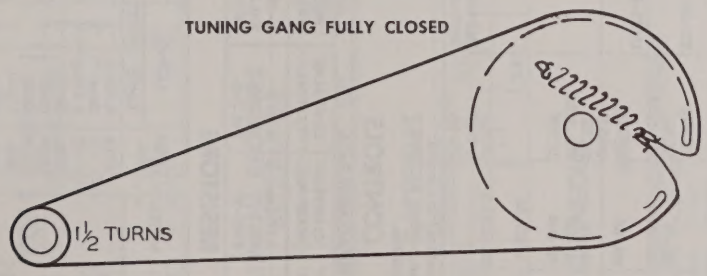


TRADE NAME	Admiral Models 4Z11, 4Z12, 4Z14, 4Z18, 4Z19 (Ch. 4Z1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	.12 Amp. @ 117 Volts AC (or) 50MA @ 7.5 Volts DC & 7.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to antenna stator lug. Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2	"	"	1620KC	"	"	A5	"
3		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



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PARTS LIST AND DESCRIPTIONS

ADMIRAL
MODEL 4Z11 (Ch. 4Z1)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲30	150	67C7-62				TM-4065	Q-085	Note 1
B	■20	150							
C	▲20	150							
D	100	25							
C2	100	25	67A4-16			TC2501	TD-100-25	MTH-2510	
C3	10000		65C10-3	DD-103	821-01	DC511			
C4	250		65C6-5	D6-251	811-251	UC-5325			
C5	.25	200	64A2-17				IMP2-P25	3302025	
C6	100		65C6-3	D6-101	801-101	UC-531		K-1310	
C7	5000		65C10-1	DD-502		DC525			
C8	10000		65C10-3	DD-103	821-01	DC511			
C9	250		65C6-5	D6-251	811-251	UC-5325			
C10	5000		65C10-1	DD-502	811-005	DC525			
C11A	100		♦65C6-5	♦PC-91	♦1407-03				
B	5000								
C	5000								
C12	1000		65C6-41	DD-102	811-102	DC521		K-1210	
C13	.047	400	65A13-5	DF-503		PT4147	IMP4-S47	3304147	Note 2
C14	.1	200	65A2-19	DF-104		PT401	IMP2-P1	330201	

♦ Items C11A, C11B, C11C, R11A, R11B and R11C are combined in one unit.
Note 1: Some versions may use a 30-20-20MFD (Part number 67C7-66).
Note 2: Some versions may use .1MFD in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	75C1-57	Q13-137	A47-1Meg-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	Not Req.	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	NOTES
R2	2.2Meg	½	60B8-225	BTS-2.2Meg	
R3	100KΩ	½	60B8-104	BTS-100K	
R4	270Ω	½	60B8-271	BTS-270	
R5	18KΩ	½	60B8-183	BTS-18K	
R6	10Meg	½	60B8-106	BTS-10Meg	
R7	390Ω	½	60B8-391	BTS-390	
R8	3.3Meg	½	60B8-335	BTS-3.3Meg	
R9	120Ω	½	60B8-121	BTS-120	
R10	10Meg	½	60B8-106	BTS-10Meg	

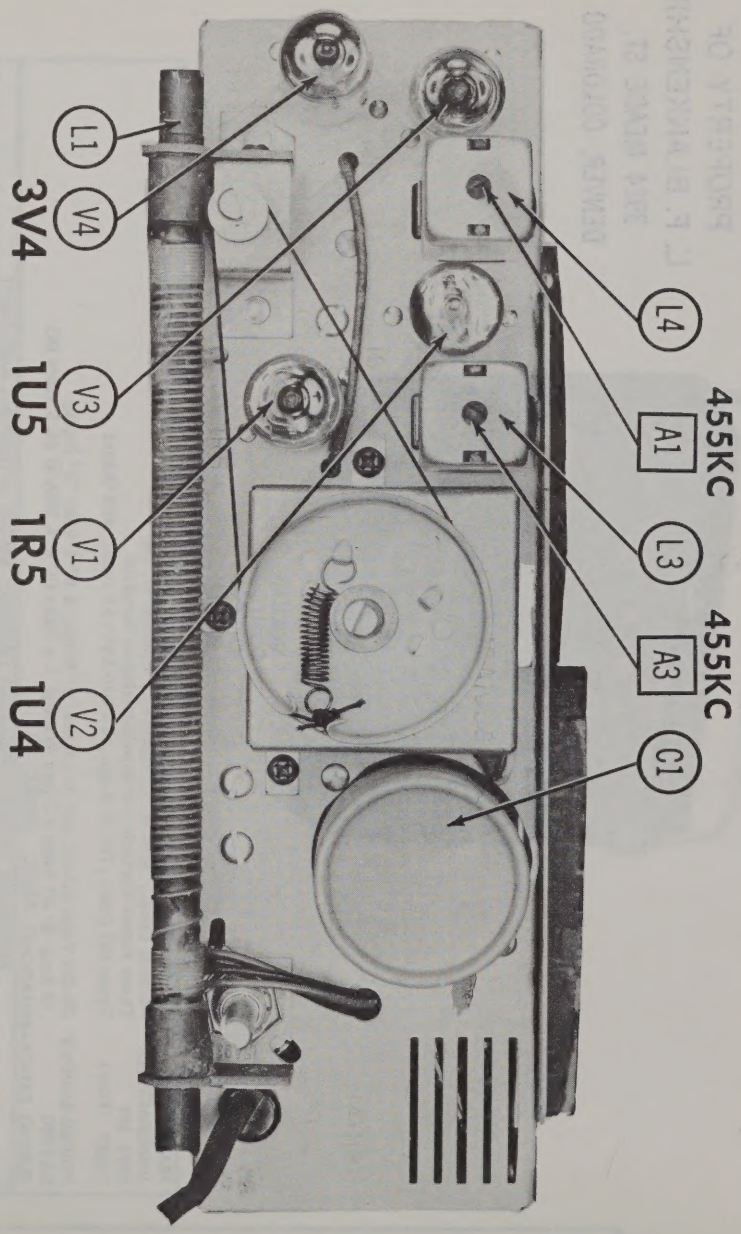
ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	NOTES
R11A	4.7Meg	½	♦65C6-6	BTS-4.7Meg	
B	1Meg	½		BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R12	1500Ω	½	60B8-152	BTS-1500	
R13A	1380Ω	5	61A5-12		
B	1380Ω				
R14	2700Ω	1	60B14-272	BTA-2700	
R15	47Ω	1	60B14-470		

♦ Items R11A, R11B, R11C, C11A, C11B and C11C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.7KΩ	3.6Ω	Part of spkr.	A-3879 ①	A-2932 ①	S-11X ①	Z1117 ①	24S52 ①	① Bend mounting tabs down, file out slots, mountson original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.6Ω	78B58-3	35J6	3A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.5Ω		69B167-1				
L2	Osc. Coil	1.3Ω	6.8Ω	69A39-8	14-1074*	BC-394*	70-Osc.*	
L3	Input IF	25Ω	25Ω	72C28-111	16-6758	BC-352	12-C1	
L4	Output IF	25Ω	25Ω	72C28-111	16-6758	BC-353	12-C2	

* Leads sufficient mounting support.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ADMIRAL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.060ADC	93A1-4	1263A	RS65	6S65	5M4	65	

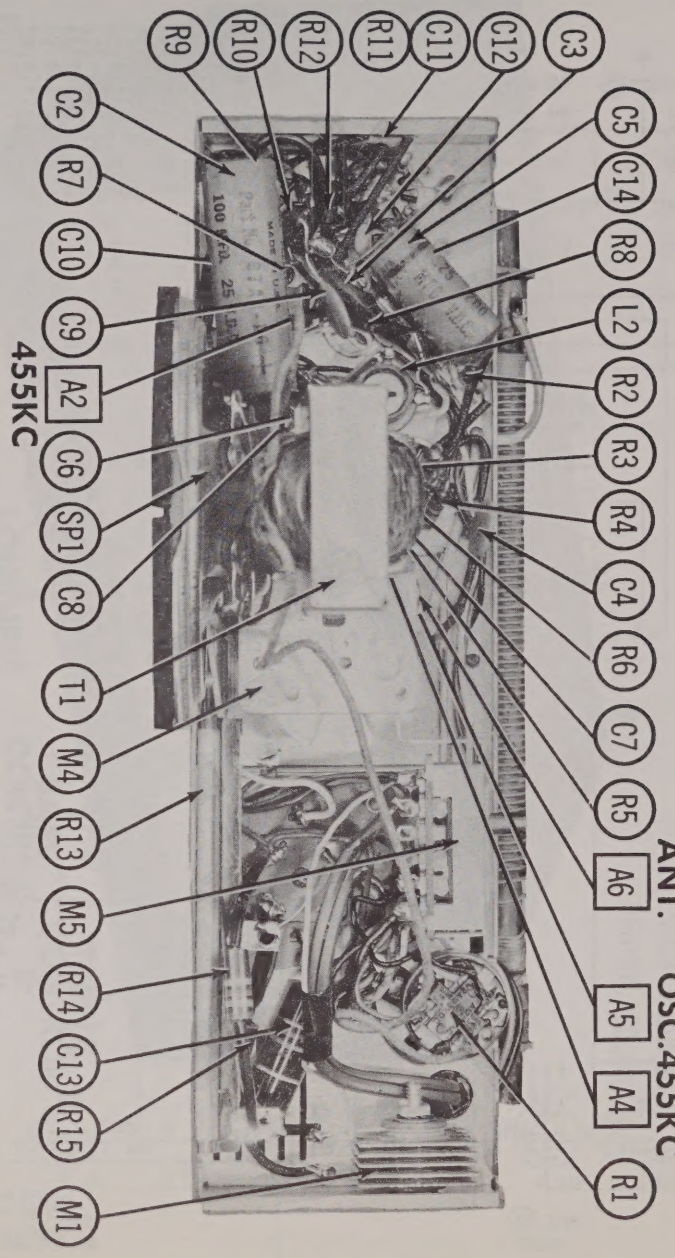
BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7.5V "A"		717			C5			
M3	67.5V "B"			467			XX45		

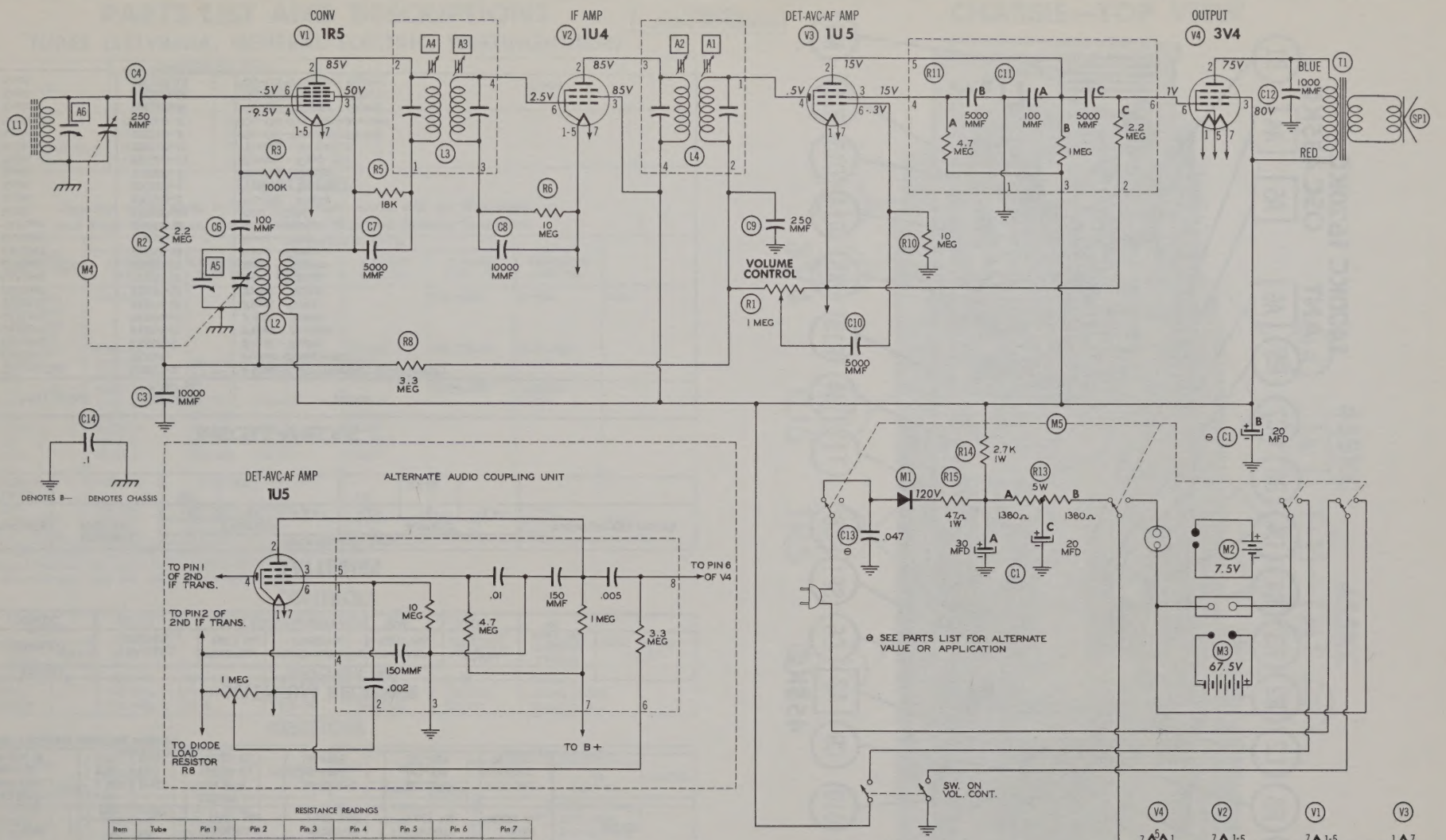
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuning Cap.	68B57-2	2 Gang - (17-290MMF; 22-135MMF)
M5	Switch	77A46	Power Changeover
	Cabinet	34E65-9	Front - Ebony
	Cabinet	34E65-11	Front - Maroon
	Cabinet	34E65-13	Front - Green
	Cabinet	34E65-15	Front - Gray
	Cabinet	34E65-17	Front - Beige
	Cabinet	34E65-10	Rear - Ebony
	Cabinet	34E65-12	Rear - Maroon
	Cabinet	34E65-14	Rear - Green
	Cabinet	34E65-16	Rear - Gray
	Cabinet	34E65-18	Rear - Beige
	Knob	33C105-19	Dial - Gold
	Knob	33C105-2	Tuning - Ebony
	Knob	33C105-5	Tuning - Maroon
	Knob	33C105-8	Tuning - Green
	Knob	33C105-14	Tuning - Gray
	Knob	33C105-17	Tuning - Beige
	Knob	33C105-3	On-Off-Volume - Ebony
	Knob	33C105-6	On-Off-Volume - Maroon
	Knob	33C105-9	On-Off-Volume - Green
	Knob	33C105-15	On-Off-Volume - Gray
	Knob	33C105-18	On-Off-Volume - Beige

CHASSIS—BOTTOM VIEW



ADMIRAL
MODEL 4Z11 (Ch. 4Z1)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.7KΩ	†20KΩ	100KΩ	*	6.6Meg	*
V 2	1U4	*	†2.7KΩ	†2.7KΩ	NC	*	10Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	TP	10Meg	*
V 4	3V4	*	†2.7KΩ	†2.7KΩ	NC	1.5KΩ	2.2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
NC - NO CONNECTION
TP - TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALTEC-LANSING
MODEL A-339-A

TRADE NAME	Altec-Lansing Model A-339-A
MANUFACTURER	Altec-Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, Calif.
TYPE SET	AC Operated 3 Channel Audio Amplifier With Equalizer
TUBES (Six)	Types 12AY7 Preamp., 12AX7 AF Amp., 12AU7 AF Amp.-Phase Inv., (2) 6CM6 Output, 6AX5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .54 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

ALTEC-LANSING
MODEL A-339-A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Altec-Lansing PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Preamplifier	12AY7	12AY7	9A	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	AF Amplifier-Phase Inverter	12AU7	12AU7	9A	
V4	Output	6CM6	6CM6	9CK	
V5	Output	6CM6	6CM6	9CK	
V6	Rectifier	6AX5GT	6AX5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Altec-Lansing PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	■40	450				FP369.1	TM-3084	T-685	
B	▲40	450							
C	▲40	25							
C2A	10	350				FP330.5	TM-T10-350	T-105	
B	▲10	350							
C	■10	350							
C3	50	3				TC29	TD-50-6	MMT-350	
C4	50	3				TC29	TD-50-6	MMT-350	
C5	50	3				TC29	TD-50-6	MMT-350	
C6	50	3				TC29	TD-50-6	MMT-350	
C7	56			D6-560	GP1K-560	UC-5456		K-1456	Note 1
C8	68			D6-680	GP1K-680	UC-5468		K-1468	
C9	.1	400		DF-104		PT401	IMP4-P1	330401	
C10	1500			D6-152	GP2L-152	UC-5215		C-1215	
C11	2500			D6-252	GP2-333-252	UC-5225		C-1225	
C12	2500			D6-252	GP2-333-252	UC-5225		C-1225	
C13	.004	400		D6-402	GP2-333-402	PT624	IMP6-D4	330624	
C14	.022	400		DF-203	817-02	PT4122	IMP4-S22	3304122	Note 2
C15	56			D6-560	GP1K-560	UC-5456		K-1456	
C16	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C17	680			D6-681	GP2K-681	UC-5368		K-1368	
C18	1800			D6-182	GP2L-182	UC-5218		C-1218	
C19	.015	200				PT6115	IMP6-S15	3306115	
C20	.0068	400		D6-682	GP2-333-682		IMP6-D68	3306268	
C21A	200		*						
B	100								
C	4500								
D	4500								
C22	.022	400		DF-203	817-02	PT4122	IMP4-S22	3304122	
C23	1500			D6-152	GP2L-152	UC-5215	IMP6-D15		
C24	.1	400		DF-104		PT401	IMP4-P1	330401	
C25	.1	400		DF-104		PT401	IMP4-P1	330401	

* Items C21A, C21B, C21C, C21D, R26A, R26B are combined in one unit and are supplied as part of loudness control (R1).

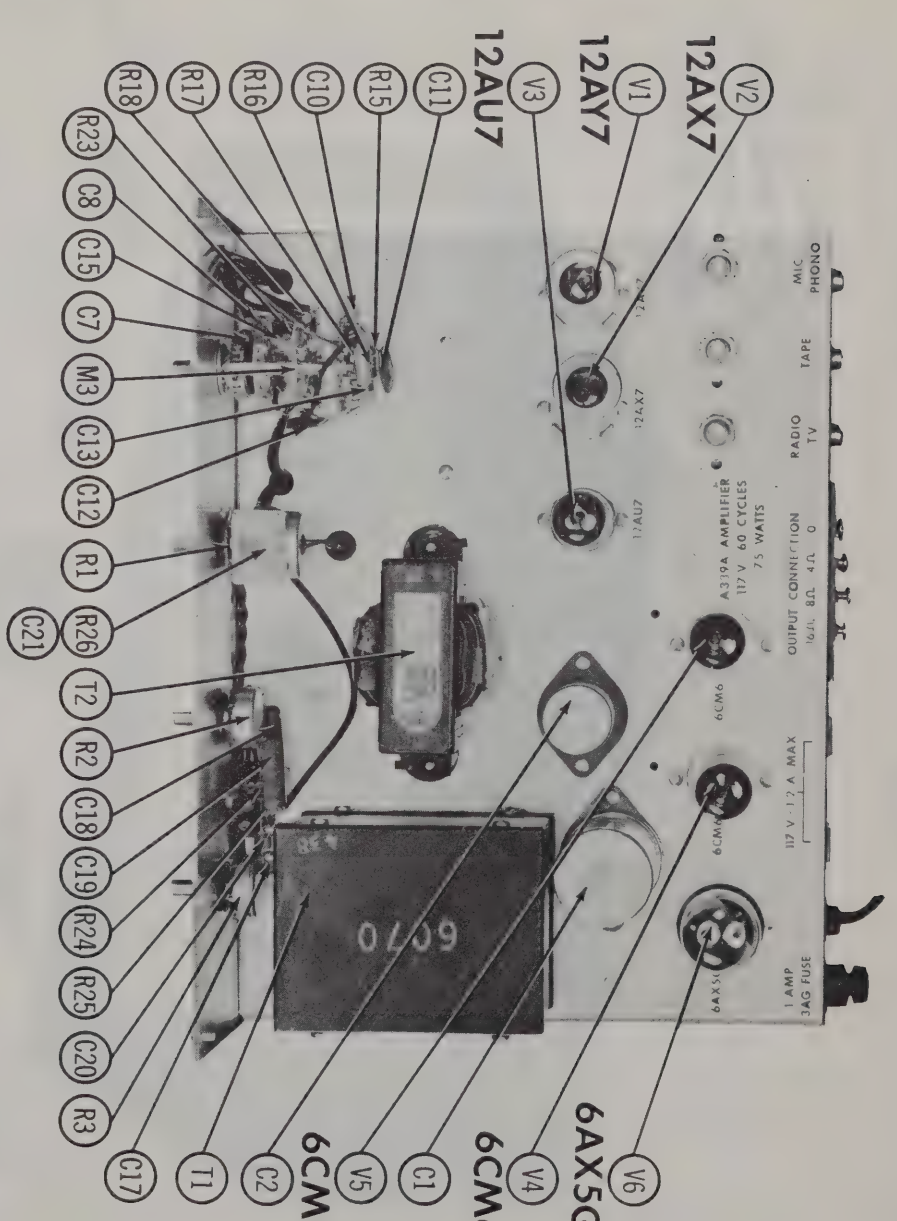
Note 1. Some versions may use 33MMF in this application.

Note 2. Some versions may use .047MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Altec-Lansing PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500KΩ	½	5588			C1-60-S		Loudness & sw. tapped @ 240KΩ and 375KΩ
R2A	1Meg	½	5589	Q13-137	A47-1Meg-Z	B-70	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	5589	Q13-137	A47-1Meg-Z	B-70	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	200KΩ	½		Q13-130	A47-250K-Z	AB-51	U-44	Mic Phono Level
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	200KΩ	½		Q13-130	A47-250K-Z	AB-51	U-44	Tape Level
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	200KΩ	½		Q13-130	A47-250K-Z	AB-51	U-44	Radio & TV Level
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Altec-Lansing PART No.	IRC PART No.	
R7	47KΩ	½		BTS-47K	
R8	47KΩ	½		BTS-47K	
R9	1200Ω	½		BTS-1200	
R10	100KΩ	½		BTS-100K	
R11	100KΩ	½		BTS-100K	
R12	1200Ω	½		BTS-1200	
R13	100KΩ	½		BTS-100K	
R14	150KΩ	½		BTS-150K	
R15	3.3Meg	½		BTS-3.3Meg	
R16	750KΩ 5%	½		BTS-750K 5%	
R17	3.3Meg	½		BTS-3.3Meg	
R18	1Meg	½		BTS-1Meg	
R19	2200Ω	½		BTS-2200	
R20	100KΩ	½		BTS-100K	
R21	56KΩ	1		BTA-56K	Note 1
R22	2.2Meg	½		BTS-2.2Meg	
R23	220KΩ	½		BTS-220K	
R24	220KΩ	½		BTS-220K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Altec-Lansing PART No.	IRC PART No.	
R25	22KΩ	½		BTS-22K	
R26A	50KΩ	½	♦	BTS-50K	
B	50KΩ	½		BTS-50K	
R27	2200Ω	½		BTS-2200	
R28	100KΩ	½		BTS-100K	
R29	22KΩ	1		BTA-22K	Note 2
R30	1Meg	½		BTS-1Meg	
R31	3300Ω	½		BTS-3300	
R32	100KΩ	½		BTS-100K	
R33	1500Ω	½		BTS-1500	
R34	33KΩ 5%	1		BTA-33K 5%	
R35	33KΩ 5%	1		BTA-33K 5%	
R36	4700Ω	1		BTA-4700	
R37	470KΩ	½		BTA-470K	
R38	250Ω	5		1 3/4A-250	
R39	470KΩ	½		BTS-470K	
R40	1500Ω	½		BTS-1500	
R41	200Ω	5		1 3/4A-200	
R42	10Ω	2			

♦ Items R26A, R26B, C21A, C21B, C21C and C21D are combined in one unit and are supplied as part of loudness control (R1).
Note 1. Some versions use a 33KΩ resistor in this application.
Note 2. Some versions use a 10KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Altec-Lansing PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .54A	620VCT .086ADC	6.3VCT 3.15A		6070					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Altec-Lansing PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	6.5KΩ CT	16Ω tap @ 8Ω, 4Ω	16333						

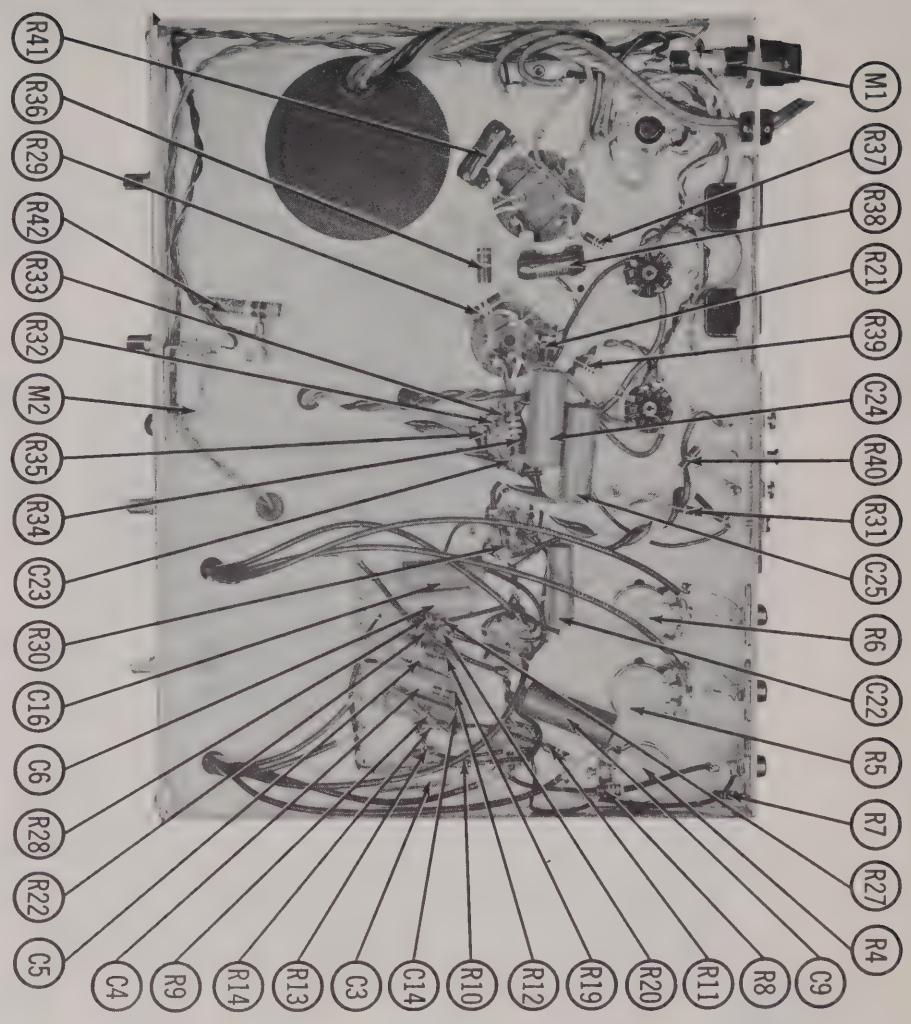
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Altec-Lansing PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1A 250V			312001 (3AG - 1A)	342001	AGC 1	HKP

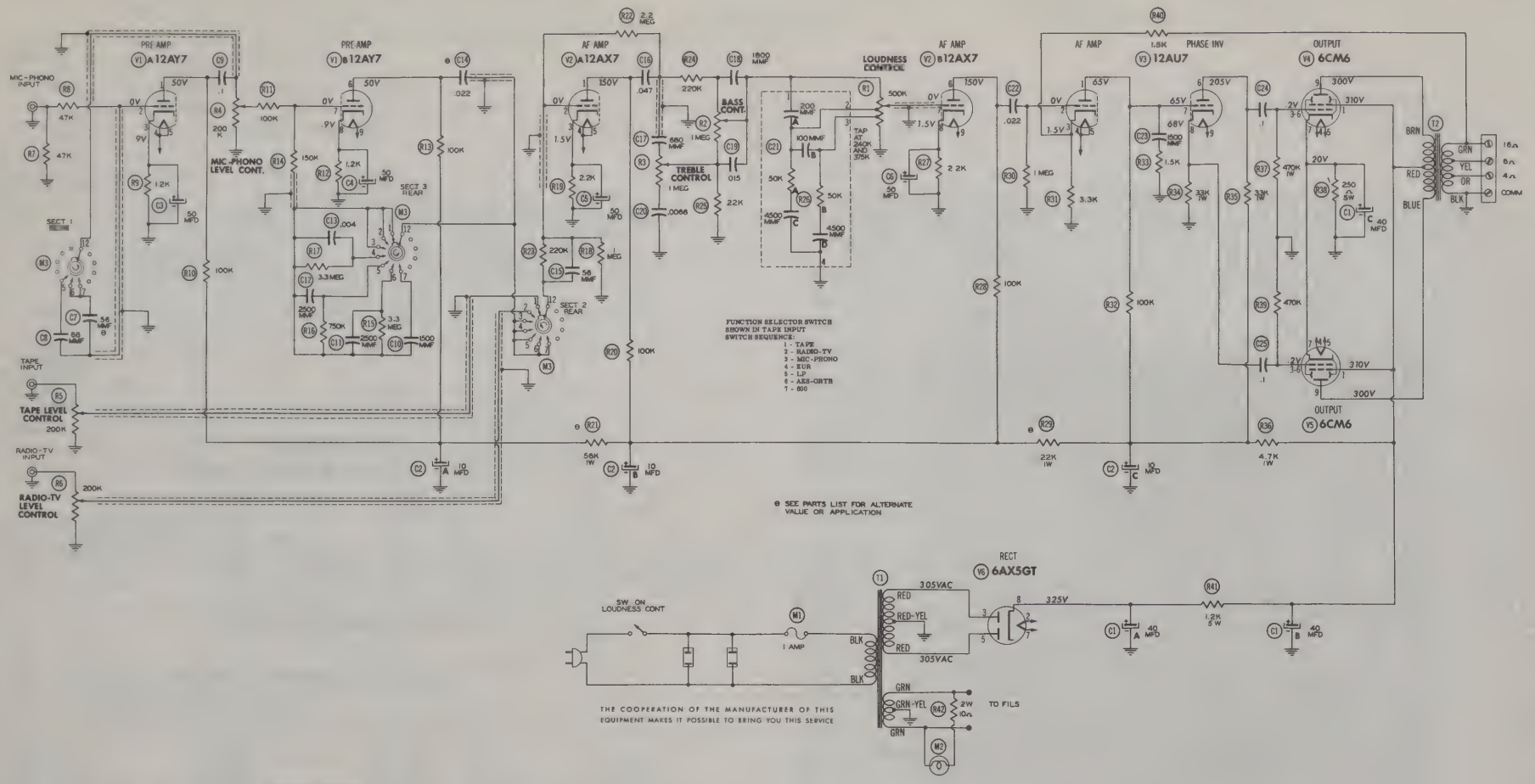
MISCELLANEOUS

ITEM No.	PART NAME	Altec-Lansing PART No.	NOTES
M2	Pilot Light		#51, Bayonet
M3	Switch		Selector & phono compensator (rotary-wafer type)

CHASSIS—BOTTOM VIEW



ALTEC-LANSING MODEL A-339-A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AY7	†180KΩ	95KΩ	1.2KΩ	.1Ω	.1Ω	†180KΩ	200KΩ	1.2KΩ	.1Ω
V 2	12AX7	†125KΩ	100KΩ	2.2KΩ	.1Ω	.1Ω	†125KΩ	100KΩ	2.2KΩ	.1Ω
V 3	12AU7	†105KΩ	1Meg	1KΩ	.1Ω	.1Ω	†38KΩ	†105KΩ	33KΩ	.1Ω
V 4	6CM6	†200Ω	INF	470KΩ	.1Ω	.1Ω	470KΩ	250Ω	INF	†310Ω
V 5	6CM6	†200Ω	INF	470KΩ	.1Ω	.1Ω	470KΩ	250Ω	INF	†310Ω
V 6	6AX5GT	INF	.1Ω	135Ω	INF	125Ω	INF	.1Ω	28KΩ	

† MEASURED FROM PIN 8 OF V6.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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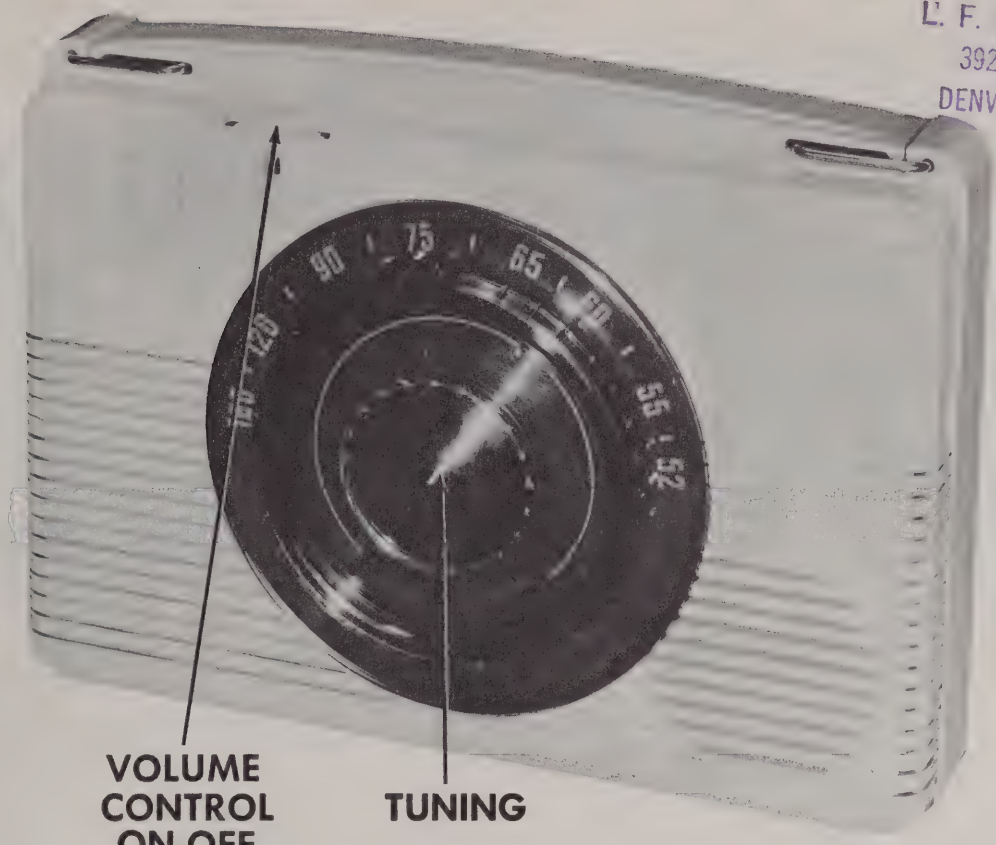
RETMA MEMBER

CORONADO
MODEL RA42-9850A

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CORONADO
MODEL RA42-9850A



CORONADO
MODEL RA42-9850A

TRADE NAME	Coronado Model RA42-9850A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1T4 IF Amp., 1S5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	1.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATINGS	260MA @ 1.5 Volts DC & 11 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	520KC - 1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	460KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2		Loop	1620KC	Tune to 1620KC signal.	"	A5	"
3		"	1400KC	Tune to 1400KC signal.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL RA42-9850A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	Det-AVC-AF Amp.	1S5	1S5	6AU	
V4	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	CORONADO PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1	5	90	35Z100					MMT-1505	
C2	.05	175	38Z104				MT2-S5	330215	
C3	100		38Z100	D6-101	GP1K-101	UC-531		K-1310	
C4	10000		38Z102	DD-103	811-01	DC-511		C-06110	
C5	10000		38Z102	DD-103	811-01	DC-511		C-06110	
C6	100		38Z100	D6-101	GP1K-101	UC-531		K-1310	
C7	2500		38Z103	D6-252	GP2-333-252	UC-5225		C-1225	
C8	100		38Z100	D6-101	GP1K-101	UC-531		K-1310	
C9	.05	175	38Z105				MT2-S5	330215	
C10	500		38Z101	D6-501	GP1K-501	UC-535		K-1350	
C11	5000		38Z106	DD-502	801-005	DC-525		C-1250	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	2Meg	½	18Z100					Volume & Switch

RESISTORS

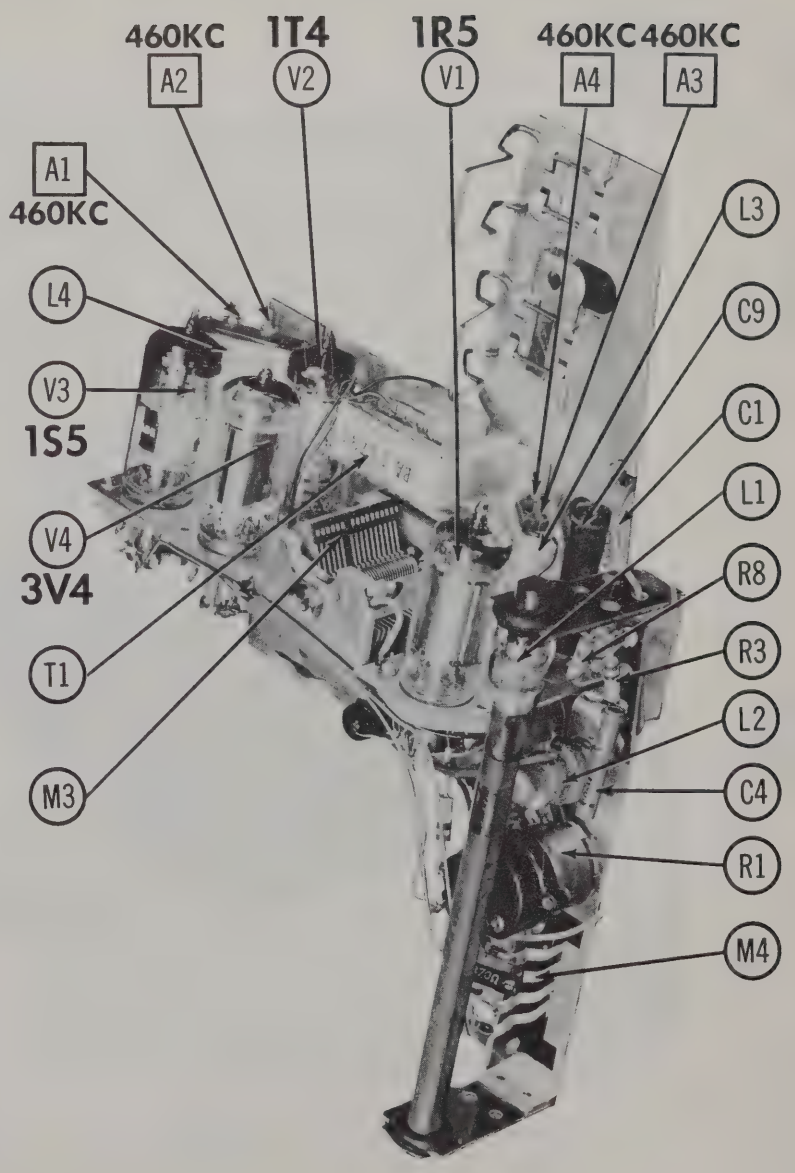
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R2	100KΩ	½	38Z109	BTS-100K	
R3	10KΩ	½	38Z115	BTS-10K	
R4	3Meg	½		BTS-3.3Meg	
R5	2000Ω	½	38Z107	BTS-1800	
R6	100KΩ	½	38Z109	BTS-100K	
R7	10Meg	½	38Z113	BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R8	5.1Meg	½	38Z112	BTS-4.7Meg	
R9	1Meg	½	38Z110	BTS-1Meg	
R10	2Meg	½	38Z111	BTS-2Meg	
R11	370Ω	½	38Z116	BTS-390	
R12	300Ω	½	38Z114	BTS-330	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	8KΩ	4.8Ω	31Z100						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	2½"	PM	4. 8Ω	12Z100			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1Ω		9Z100				
L2	Osc. Coil	1. 1Ω	2. 4Ω	9Z104				
L3	Input IF	13Ω	13Ω	9Z102				
L4	Output IF	12Ω	12Ω	9Z103				

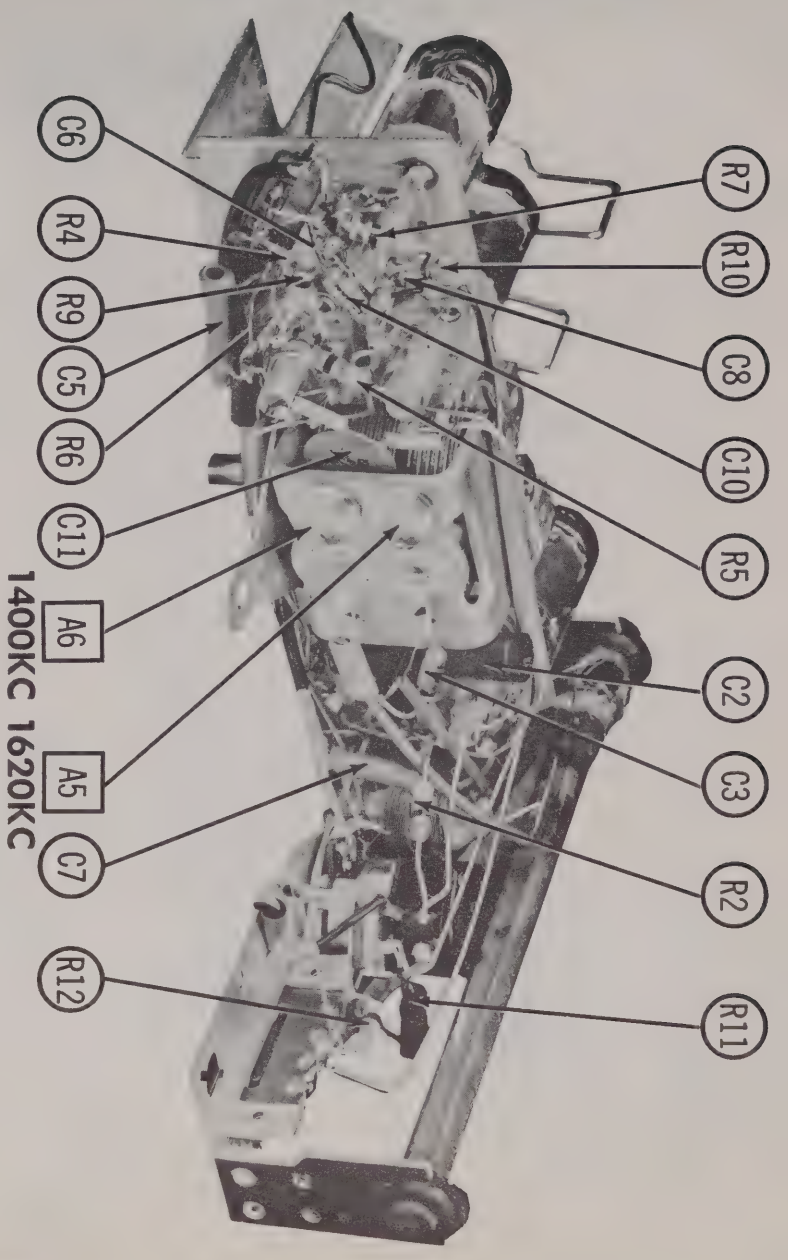
BATTERIES

ITEM No.	VOLTAGE	CORONADO PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1. 5V		950			2R			Connect 2 in parallel.
M2	67. 5V			467			XX45		

MISCELLANEOUS

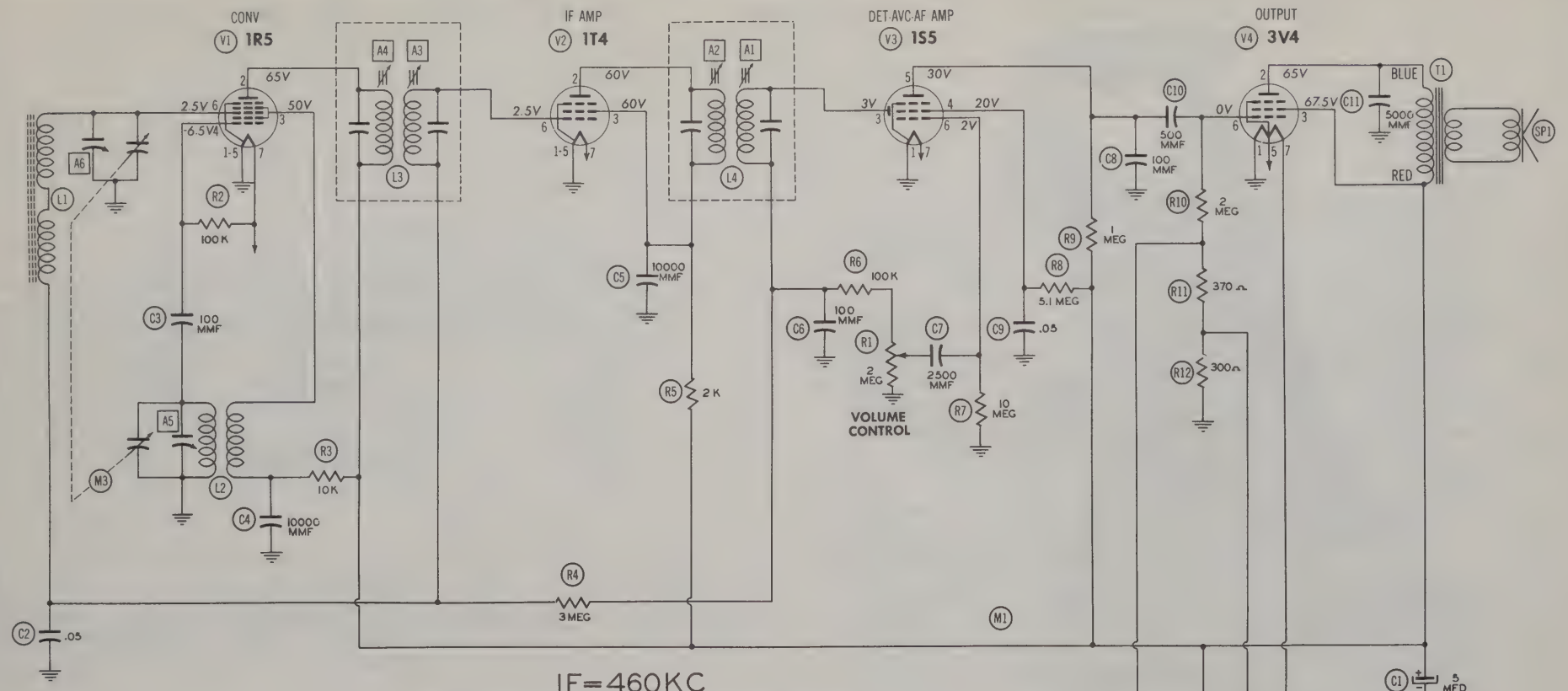
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	Tuning Cap	14Z100	13-320MMF; 20-144MMF.
M4	Switch	1Z100	Battery Saver
	Cabinet	16Z100	Case (less back)
	Knob	10Z100	Tuning
	Knob	10Z101	Volume
	Knob	10Z102	Battery Saver Switch
	Handle	40Z100	
	Dial Scale	20Z100	

CHASSIS—BOTTOM VIEW



CORONADO
MODEL RA42-9850A

CORONADO
MODEL RA42-9850A



IF=460KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†14Ω	†10KΩ	100KΩ	*	4.1Meg	*
V 2	1T4	*	†2KΩ	†2KΩ	4.1Meg	*	4.1Meg	*
V 3	1S5	*	670Ω	2.1Meg	†5Meg	†1Meg	10Meg	*
V 4	3V4	*	†396Ω	†0Ω	INF	*	2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM PIN 3 OF V11

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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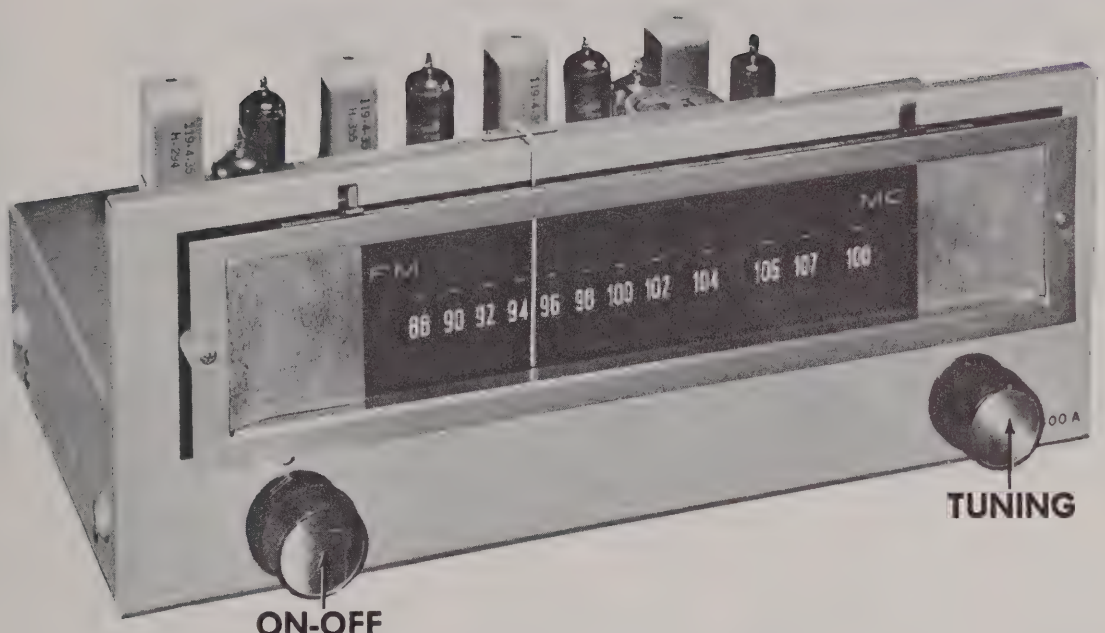
274-4

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DAVID BOGEN
MODEL FM400A



DAVID BOGEN
MODEL FM400A

TRADE NAME	David Bogen Model FM400A	
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N. Y.	
TYPE SET	AC Operated FM Superheterodyne Tuner For Custom Installation	
TUBES (Seven)	Types 12AT7 RF Amp.-Mixer, 12AT7 Osc.-AFC, (2) 6AU6 IF Amp., 6AU6 Limiter, 6AL5 Discriminator, 6X4 Rectifier	
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING .27 Amp. @ 117 Volts AC
TUNING RANGE	FM 88MC - 108MC	

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	RF Amp. -Mixer	12AT7	12AT7	9A	
V2	AFC-Osc.	12AT7	12AT7	9A	
V3	IF Amp.	6AU6	6AU6	7BK	
V4	IF Amp.	6AU6	6AU6	7BK	
V5	Limiter	6AU6	6AU6	7BK	
V6	Discriminator	6AL5	6AL5	6BT	
V7	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT	David Bogen PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲20	450				FP376.5	TM-D20-500	D-270	
B	▲20	450							
C2	8	250				TC51	TD-8-250	FM-2508	
C3	1000			D6-102	GP2L-102	UC-521		K-1210	
C4	47			D6-470	GP1K-470	UC-5447		K-1447	
C5	1.2								
C6	100			D6-101	GP1K-100	UC-531		K-1310	
C7	1000			D6-102	GP2L-102	UC-521		K-1210	
C8	5								
C9	1000			D6-102	GP2L-102	UC-521		K-1210	
C10	1000			D6-102	GP2L-102	UC-521		K-1210	
C11	10000			DD-103	811-01	DC-511			
C12	10000			DD-103	811-01	DC-511			
C13	1.2								
C14	10000			DD-103	811-01	DC-511			
C15	10000			DD-103	811-01	DC-511			
C16	10000			DD-103	811-01	DC-511			
C17	10000			DD-103	811-01	DC-511			
C18	47			D6-470	GP1K-470	UC-5447		K-1447	
C19	10000			DD-103	811-01	DC-511			
C20	10000			DD-103	811-01	DC-511			
C21	10000			DD-103	811-01	DC-511			
C22	100			D6-101	GP1K-101	UC-531		K-1310	
C23	.001	200		D6-102	GP2L-102	PT621	IMP6-D1	330621	
C24	.047	200		DF-503		PT4147	IMP2-S47	3302147	
C25	.047	200		DF-503		PT4147	IMP2-S47	3302147	
C26	10000			DD-103	811-01	DC-511			
C27	.047	600		DF-503		PT6147	IMP6-S47	3306147	

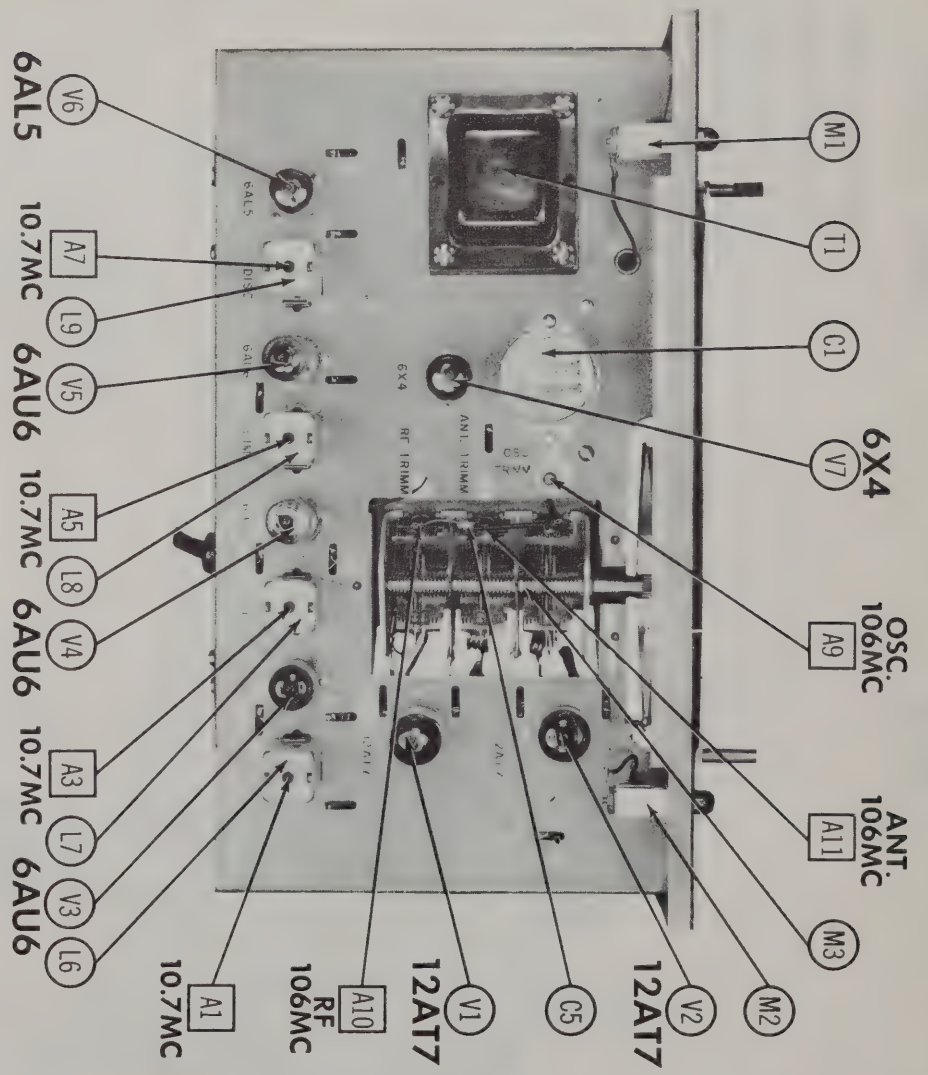
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R1	68Ω	1/2		BTS-68	
R2	2700Ω	1/2		BTS-2700	
R3	1000Ω	1/2		BTS-1000	
R4	10KΩ	1/2		BTS-10K	
R5	1000Ω	1/2		BTS-1000	
R6	220Ω	1/2		BTS-220	
R7	560Ω	1/2		BTS-560	
R8	220KΩ	1/2		BTS-220K	
R9	68Ω	1/2		BTS-68	
R10	3300Ω	1		BTA-3300	
R11	68KΩ	1/2		BTS-68K	
R12	68Ω	1/2		BTS-68	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R13	3300Ω	1		BTA-3300	
R14	100KΩ	1/2		BTS-100K	
R15	33KΩ	1/2		BTS-33K	
R16	47KΩ	1/2		BTS-47K	
R17	15KΩ	1/2		BTS-15K	
R18	100KΩ	1/2		BTS-100K	
R19	100KΩ	1/2		BTS-100K	
R20	47KΩ	1/2		BTS-47K	Note 1
R21	1Meg	1/2		BTS-1Meg	Note 2
R22	500Ω	7		1 3/4A-500	
R23	1000Ω	7		1 3/4A-1000	
R24	68Ω	1/2		BTS-68	

Note 1: Some versions may use a 68KΩ resistor in this application.
Note 2: Some versions may use a 3.3Meg resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .27A	300VCT .034ADC	6.3VAC @ 2.75A		7375-1A					22R38 ①

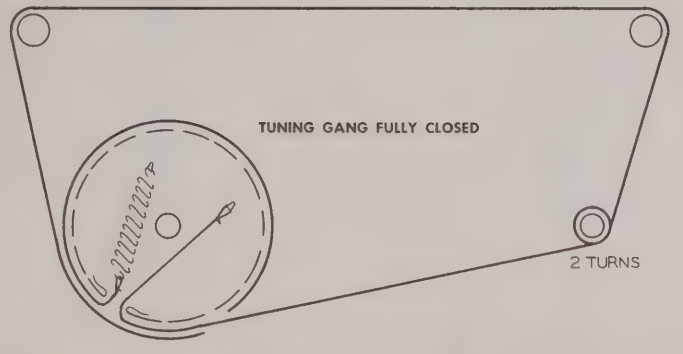
① Tape 6.3V center tap.

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M1	Dial Light	C-821	#47, Bayonet
M2	Dial Light		#47, Bayonet
M3	Tuning Cap.		3 Gang
M4	Switch		On-Off & AFC defeat

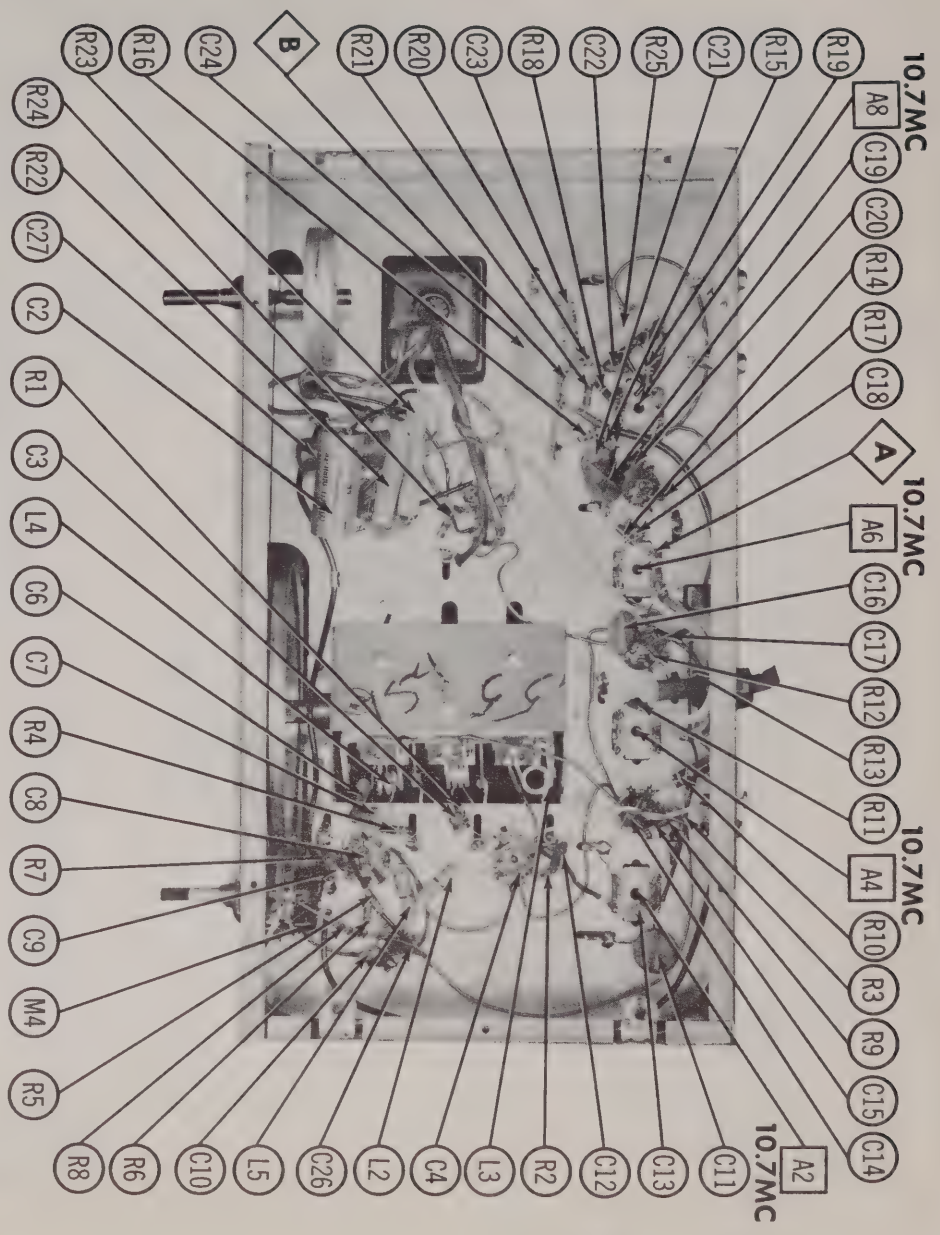
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	David Bogen PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω		U-402				
L2	RF Choke	.8Ω		U-501	19-1000		4602	1 Microhenry; IRC part no. CLA
L3	FM RF Coil	0Ω		U-424				
L4	FM Osc. Coil	0Ω		U-417				
L5	RF Choke	.8Ω		U-501	19-1000		4602	1 Microhenry; IRC part no. CLA
L6	1st FM IF	.6Ω	.6Ω	H-294	16-3487	FM-254	1463	
L7	2nd FM IF	.7Ω	.7Ω	H-355	16-3487	FM-254	1463	
L8	3rd FM IF	.8Ω	.8Ω	H-355	16-3487	FM-254	1463	
L9	Discriminator	.7Ω	.9ΩCT	H-295	17-3494	FM-253	1464	



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.01MFD	High side to pin 2 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (Unmod.)	Point of non-interference.	DC probe thru 100KΩ to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2	"	"	"	"	DC probe thru 100KΩ to point Ⓑ. Common to chassis.	A7	"
3	"	"	"	"	"	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1	.01MFD	High side to pin 2 (grid) of 12AT7 (V1). Low side chassis.	10.7MC (450KC Swp)	Point of non-interference.	Vert. amp. thru 100KΩ to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2	"	"	"	"	"	A7	"
3	"	"	"	"	Vert. amp. thru 100KΩ to point Ⓑ. Low side to chassis.	A8	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	300Ω carbon resistor	High side to antenna terminal lug. Low side to chassis.	106MC (Unmod)	106MC	DC probe thru 100KΩ to point Ⓐ. Common to chassis.	A9, A10, A11	Adjust for maximum deflection.

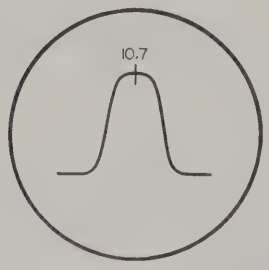


FIG. 1

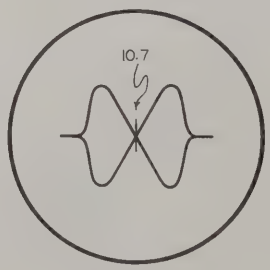
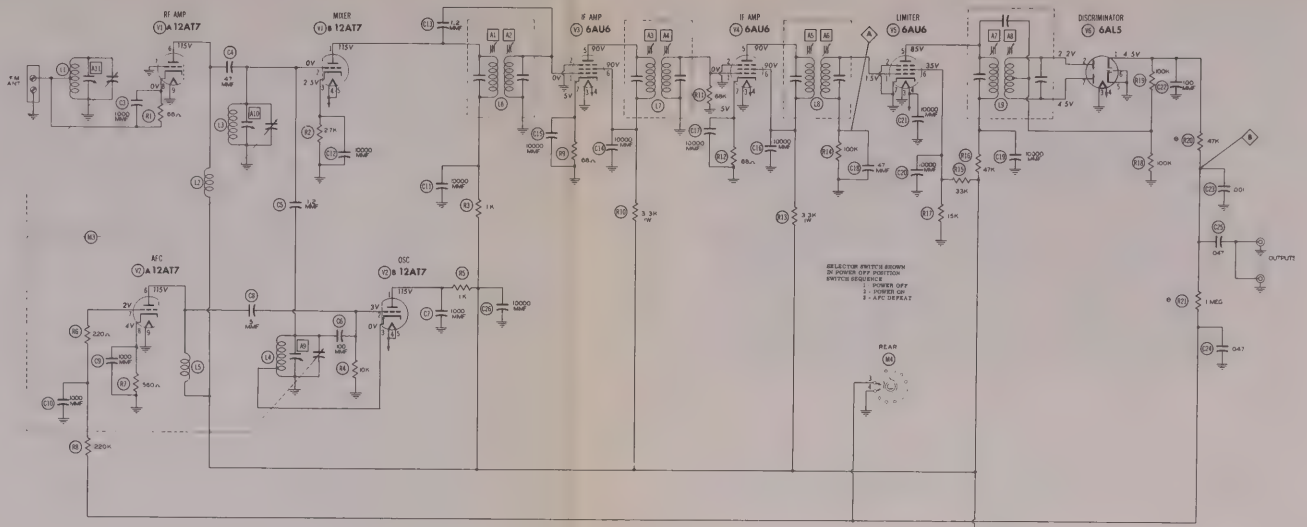


FIG. 2



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	12.5KΩ	0Ω	2.7KΩ	.1Ω	.1Ω	21.5KΩ	0Ω	68Ω	0Ω
V 2	12AT7	12.5KΩ	10KΩ	0Ω	.1Ω	.1Ω	21.5KΩ	1.5Meg	560Ω	0Ω
V 3	6AU6	.1Ω	0Ω	0Ω	.1Ω	14.8KΩ	14.8KΩ	88Ω		
V 4	6AU6	.1Ω	0Ω	0Ω	.1Ω	14.8KΩ	14.8KΩ	88Ω		
V 5	6AU6	100KΩ	0Ω	0Ω	.1Ω	148.5KΩ	134KΩ	0Ω		
V 6	6AL5	200KΩ	100KΩ	.1Ω	.1Ω	0Ω	NC	100KΩ		
V 7	6X4	155Ω	NC	0Ω	.1Ω	TP	155Ω	50KΩ		

† MEASURED FROM PIN 7 OF V1.
NC - NO CONNECTION
TP - TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

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DEWALD
MODEL E-520

TRADE NAME	Dewald Model E-520
MANUFACTURER	Dewald Radio Mfg. Co., 35-15 37th. Ave., Long Island City, N.Y.
TYPE SET	AC-DC Operated 3 Band AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC (180-220 Volts With Ballast) RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	525KC-1680KC SHORTWAVE (#2) 2.5MC-8.0MC, (#1)7.5MC -24.2MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to antenna lead extending from rear of chassis. Low side thru .1MFD to chassis.	455KC (400~Mod)	BC (CCW)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	24.2MC	SW 1	"	"	A5	"
3.	"	"	23.0MC	"	Tune to 23MC signal	"	A6	"
4.	"	"	8MC	SW 2	Tuning gang fully open	"	A7	"
5.	"	"	7MC	"	Tune to 7MC signal	"	A8	"
6.	"	"	1500KC	BC	Tune to 1500KC signal	"	A9	"
7.	"	"	600KC	"	Tune to 600KC signal	"	A10	Adjust for maximum output while rocking tuning gang.

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PARTS LIST AND DESCRIPTIONS

DEWALD MODEL E-520

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.
C1A	■80	150	2049-2			FP311.1	TM-3016	T-055
B	▲40	150						
C	25	25						
C2	.002	600		D6-202	GP2-333-202	PT623	IMP6-D3	330623
C3	.05	400		DF-503		PT415	IMP4-S5	330415
C4	47	500		D6-470	GP1K-470	MC225		K-1447
C5	2200			D6-222	GP2-333-222	UC-5222		C-1222
C6	3300			D6-332	GP2-333-332	UC-5233		C-1233
C7	.05	400		DF-503		PT415	IMP4-S5	330415
C8	220			D6-221	GP2K-221	UC-5322		K-1322
C9	.01	400		D6-103	GP2-333-103	PT411	IMP4-S1	330411
C10A	5000							
B	250			♦PC-70	♦1406-01			
C								
C11	.003	600		D6-302	GP2-333-302	PT623	IMP6-D3	330623
C12	.02	400		DF-203	817-02	PT412	IMP4-S2	330412
C13	.05	400		DF-503		PT415	IMP4-S5	330415

♦ Items C10A, C10B, C10C, R11A, R11B are combined in one unit.
When replacing items separately C10B and C10C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	3043B-3	Q13-139	A47-2Meg-Z	AB-76	U-55	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	3013-4	Q13-133	A47-500K-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	NOTES
R3	560Ω	½		BTS-560	
R4	1000Ω	½		BTS-1000	
R5	22KΩ	½		BTS-22K	
R6	10Ω	½		BTS-10	
R7	100Ω	½		BTS-100	Note 1
R8	2.2Meg	½		BTS-2.2Meg	
R9	680Ω	½		BTS-680	Note 1

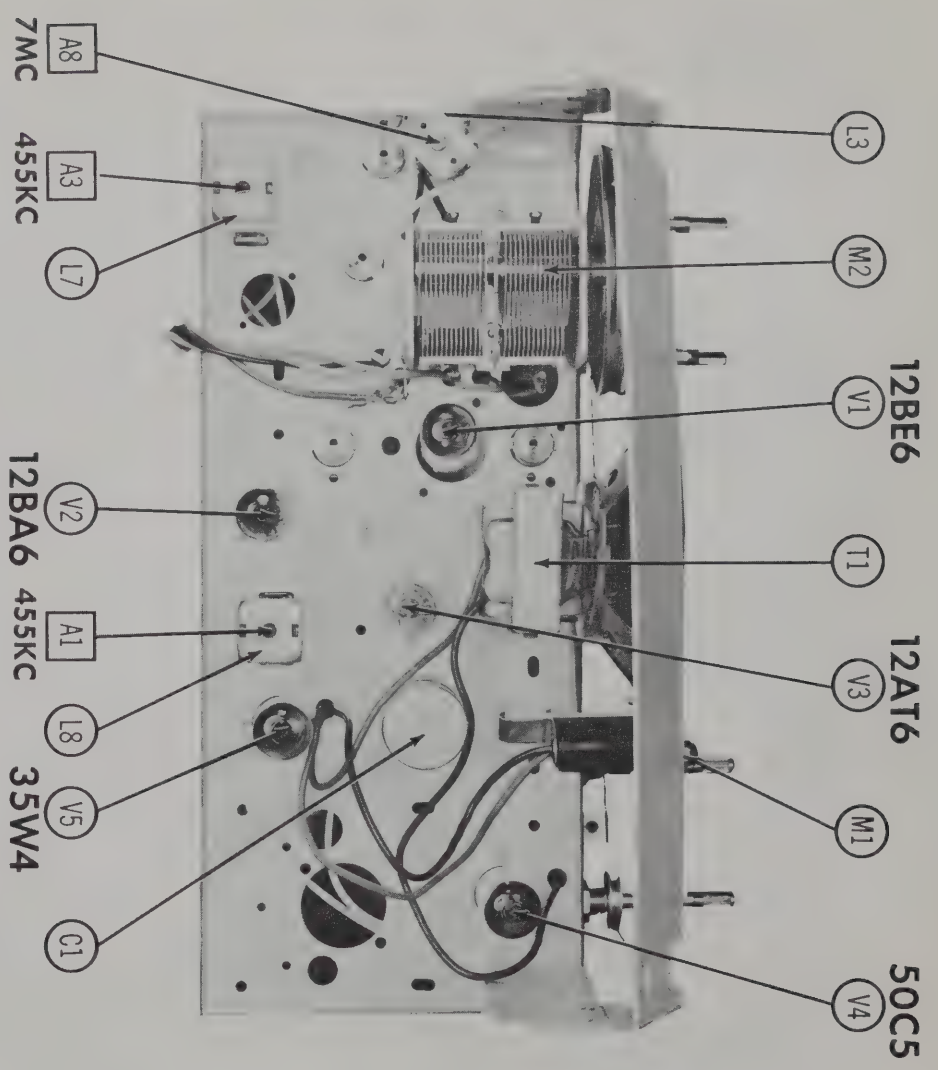
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	NOTES
R10	4.7Meg	½		BTS-4.7Meg	
R11A	500KΩ	½		BTS-500K	
B	500KΩ	½		BTS-500K	
R12	150Ω	½		BTS-150	
R13	1500Ω	1		BTA-1500	
R14	12Ω	½		BTS-12Ω	

♦ Items R11A, R11B, C10A, C10B and C10C are combined in one unit.
Note 1. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: DEWALD PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.3KΩ	3.3Ω	Part of Spkr.	A-3876 ①	A-2928 ①	S-1X ①	Z1102 ① ②	24S50 ①	① Bend mounting tabs down, file out slots, mount on orig. mounting brackets. ② Tape 5% tap on primary

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	DEWALD PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	7017-4 7017-2 ①	ST-105 Mod. P5-X	5A1	① Alternate speaker PM

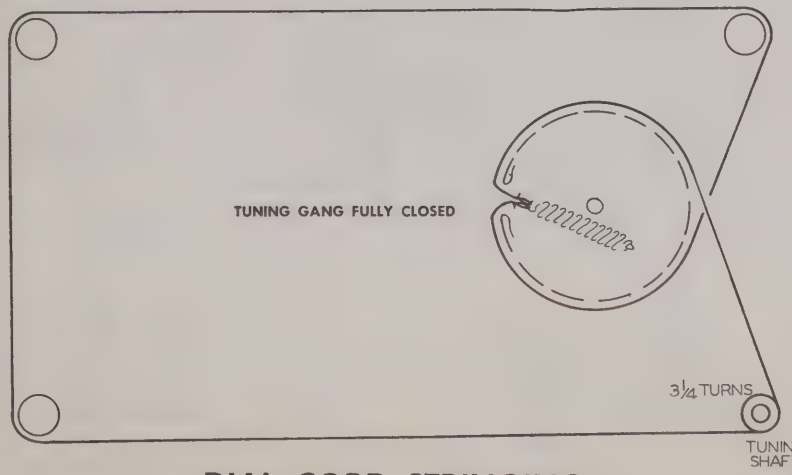
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	DEWALD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.1Ω	2Ω					Broadcast band - 525-1680KC
L2	Sw. Ant. Coil	0Ω	0Ω	1094				Band 1 (7.5-24.2MC)
L3	Sw. Ant. Coil	.2Ω	.2Ω	1094				Band 2 (2.5-8MC)
L4	Sw. Osc. Coil	.1Ω		1095				Tapped -Band 1 (7.5-24.2MC)
L5	Sw. Osc. Coil	.2Ω		1095				Tapped - Band 2 (2.5 -8MC)
L6	BC Osc. Coils	3.3Ω		1093A	14-1040	BC-387	71-OSC *	Tapped ⓐ .4Ω
L7	Input IF	21Ω	22Ω	1091A	16-6758	BC-352	12-C1	
L8	Output IF	21Ω	22Ω	1091A	16-6758	BC-353	12-C2	

* Use primary winding.

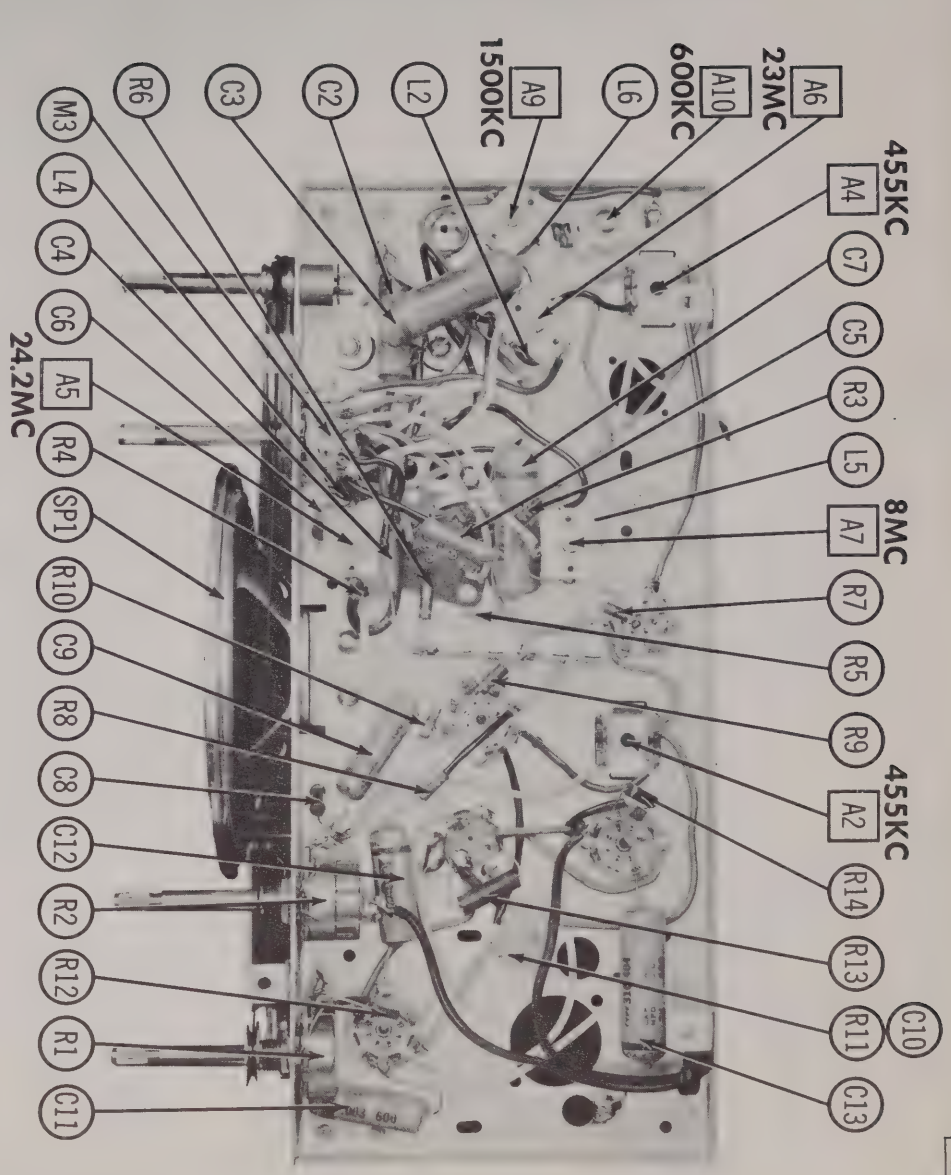
MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M1	Dial Light		#47, Bayonet
M2	Tuning Cap.	2014-4	2 Gang (12-450MMF, 12-450MMF)
M3	Switch	8017-B-4	Band Selector (4 pole - 3 position)
A5	Trimmer Cap.	C-B1095-1	Band 1 - Sw. Osc. Trimmer (7.5-24.2MC)
A7	Trimmer Cap.	C-B1095-2	Band 2 - Sw. Osc. Trimmer (2.5-8MC) 2-30MMF
A9	Trimmer Cap.	C-B1093	BC Band - Osc. Trimmer (525-1680KC) 2-30MMF
A10	Padder	2050	BC Band - Osc. padder (525-1680KC) 400-750MMF
A6	Trimmer Cap.	C-B1094-1	Band 1 - Sw. Ant. Trimmer (7.5-24.2MC) 2-30MMF
A8	Trimmer Cap.	C-B1094-2	Band 2 - Sw. Ant. Trimmer (2.5-8MC) 2-30MMF
	Cabinet	4093-C	
	Knob	4132-1	4 used
	Dial Scale	6022A-2	



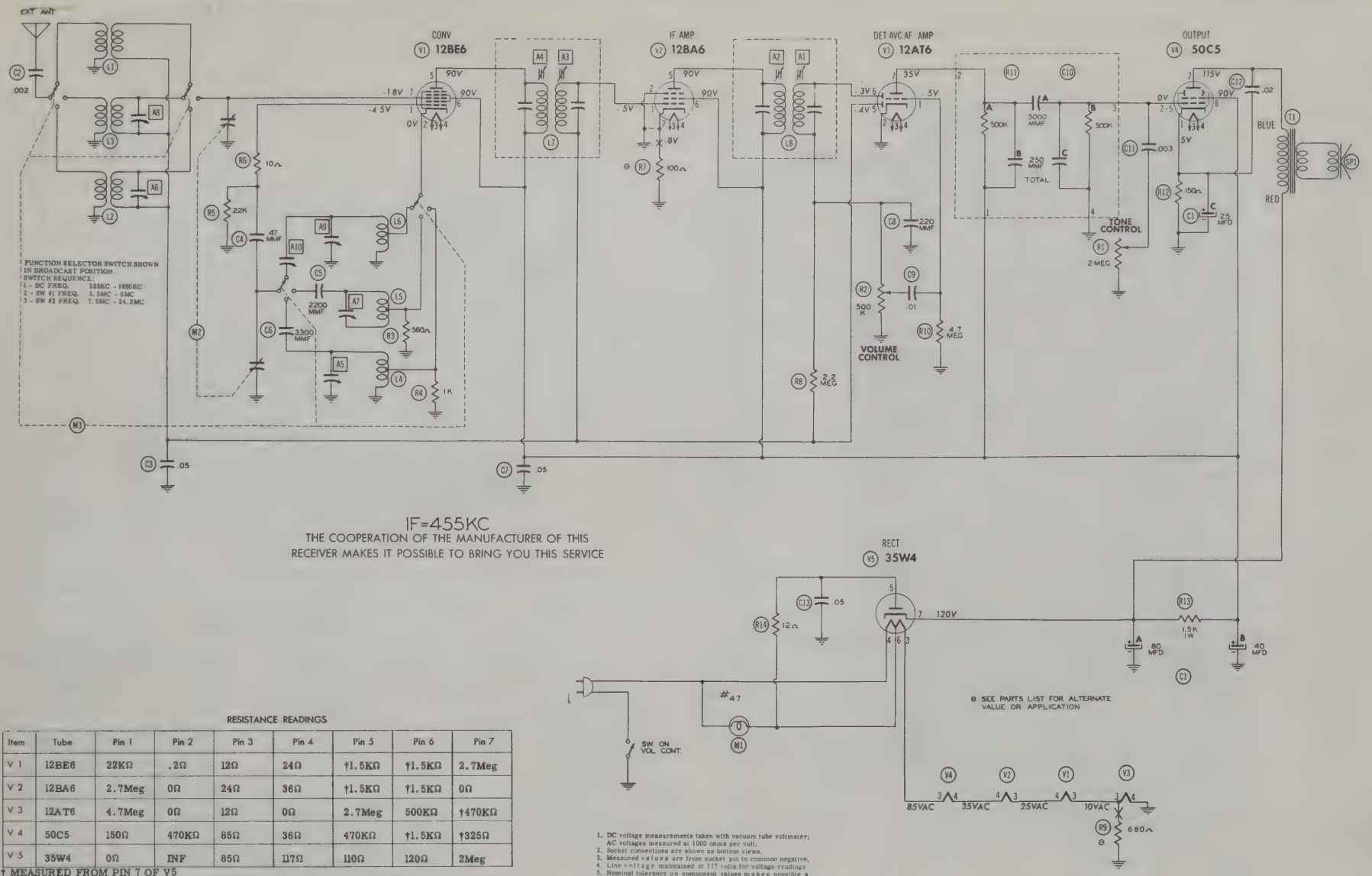
DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



DEWALD MODEL E-520

DEWALD MODEL E-520



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.2Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	0Ω
V 3	12AT6	4.7Meg	0Ω	12Ω	0Ω	2.7Meg	500KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	85Ω	36Ω	470KΩ	†1.5KΩ	†325Ω
V 5	35W4	0Ω	INF	85Ω	117Ω	110Ω	120Ω	2Meg

† MEASURED FROM PIN 7 OF V5

VOLTAGE AND RESISTANCE MEASUREMENTS TAKEN IN "BC" POSITION UNLESS OTHERWISE NOTED.

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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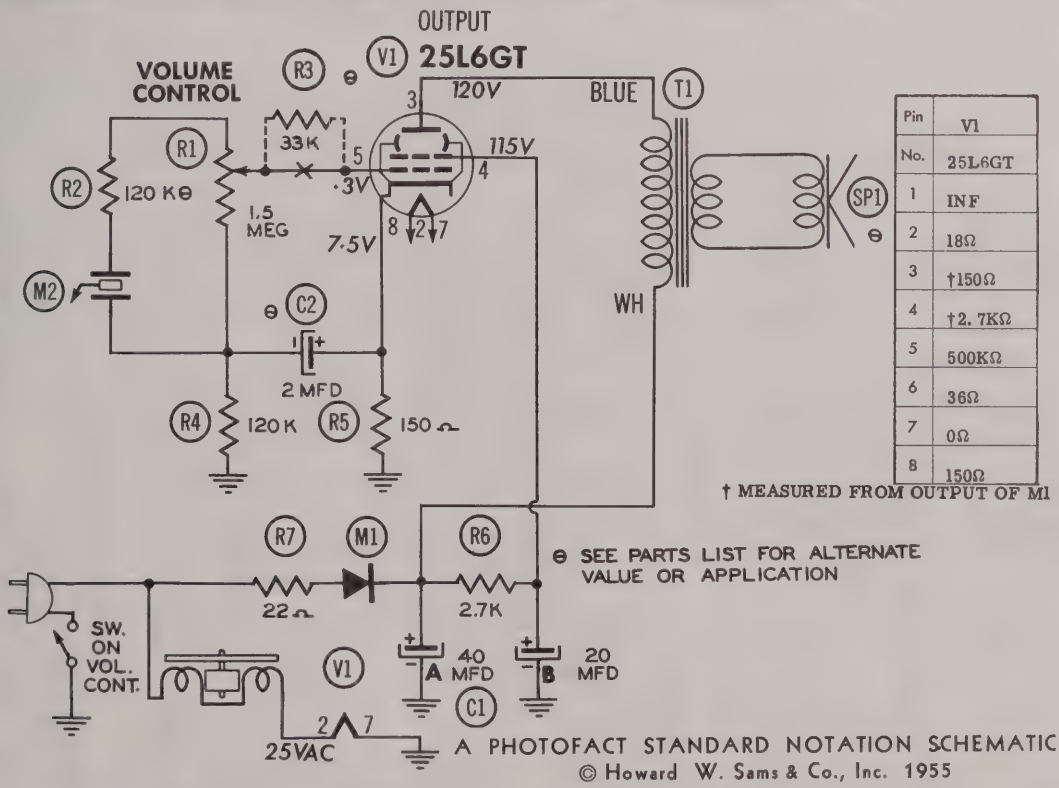
3924 MEADE ST.
DENVER, COLORADO

EMERSON
MODELS 806, 807

TRADE NAME	Emerson Models 806 & 807
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N. Y.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25L6GT Output
POWER SUPPLY	105-125 Volts AC - 60 Cycles
RATING	.38 Amp. @ 117 Volts AC



Pin No.	V1 25L6GT
1	INF
2	18Ω
3	†150Ω
4	†2.7KΩ
5	500KΩ
6	36Ω
7	0Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Output	25L6GT	25L6GT	7S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	40	150	960929			FP210	TM-4020-150	D-055	Red
B	20	150							Blue
C2	2	10	988748-1			TC302			Note 1

Note 1. Some versions use .1MFD@ 200V in this application. (Part no. 922315)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	CM13127	Q13-137	A47-2Meg-Z	AB-70	U-55	Volume - Note
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A

Note: Some versions may use an alternate control part no. 960925.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R2	120KΩ	½	350992	BTS-120K	
R3	33KΩ	½	350852	BTS-33K	Note 1
R4	120KΩ	½	350922	BTS-120K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R5	150Ω	½	350292	BTS-150	
R6	2700Ω	½	350592	BTS-2700	
R7	22Ω	½	350092	BTS-22	

Note 1: Not used in all versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: EMERSON PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.4KΩ	3.3Ω	960923	A-3332	A-3025	S-12X	Z1101	26S58	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: EMERSON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.3Ω	960921 or	4J6	4A07	① Alternate speaker.
	4"	PM	3.3Ω	960922 ①		4A1	

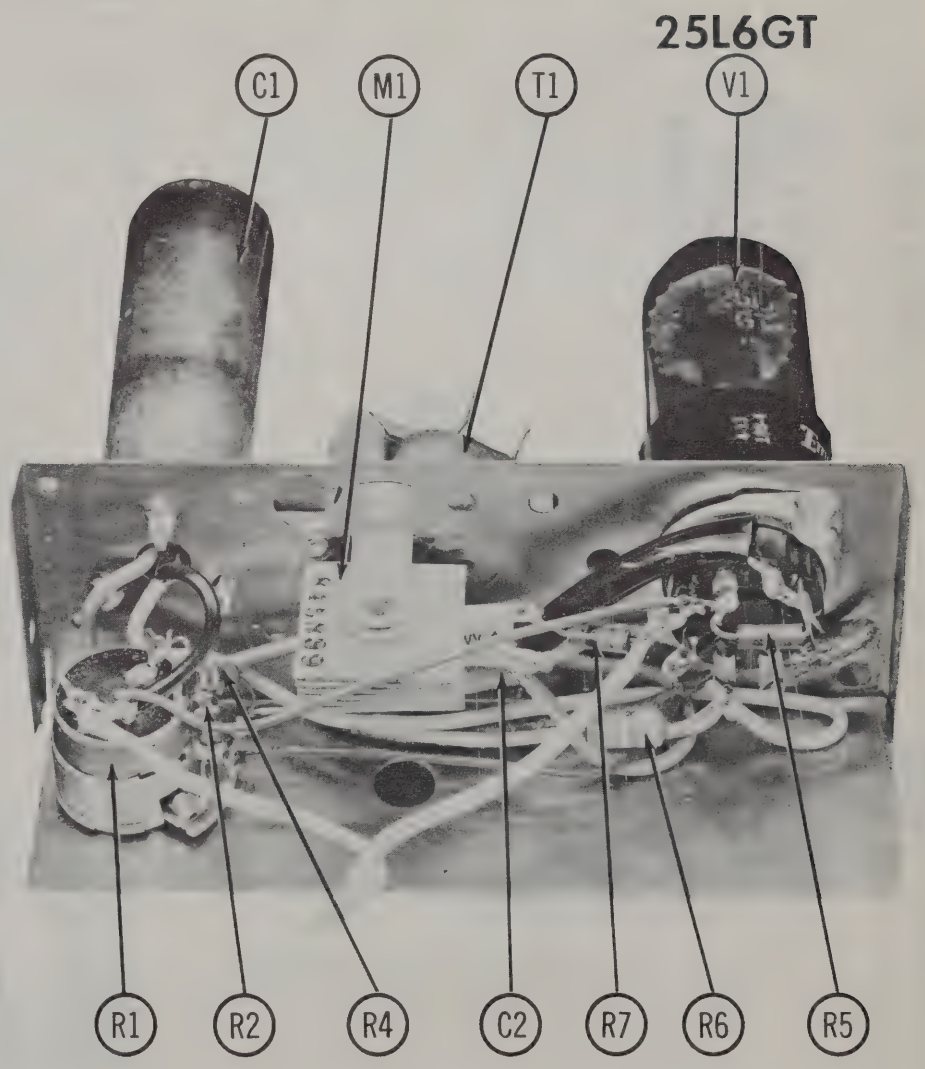
SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: EMERSON PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.063A	960924	1263B ①	RS65EB	6S65 ①	8J1 ①	65 ①	① Use original mounting bracket.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: EMERSON PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M2		L29		60		* Complete tone arm and cartridge assembly.
		*P29		*2400		

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3		*J-752 or *J-152	†A-311 or ♦A-311D	†WS-400-2 or *WA-400-2 or ♦W-400AGD	* Metal † Jewel ♦ Diamond

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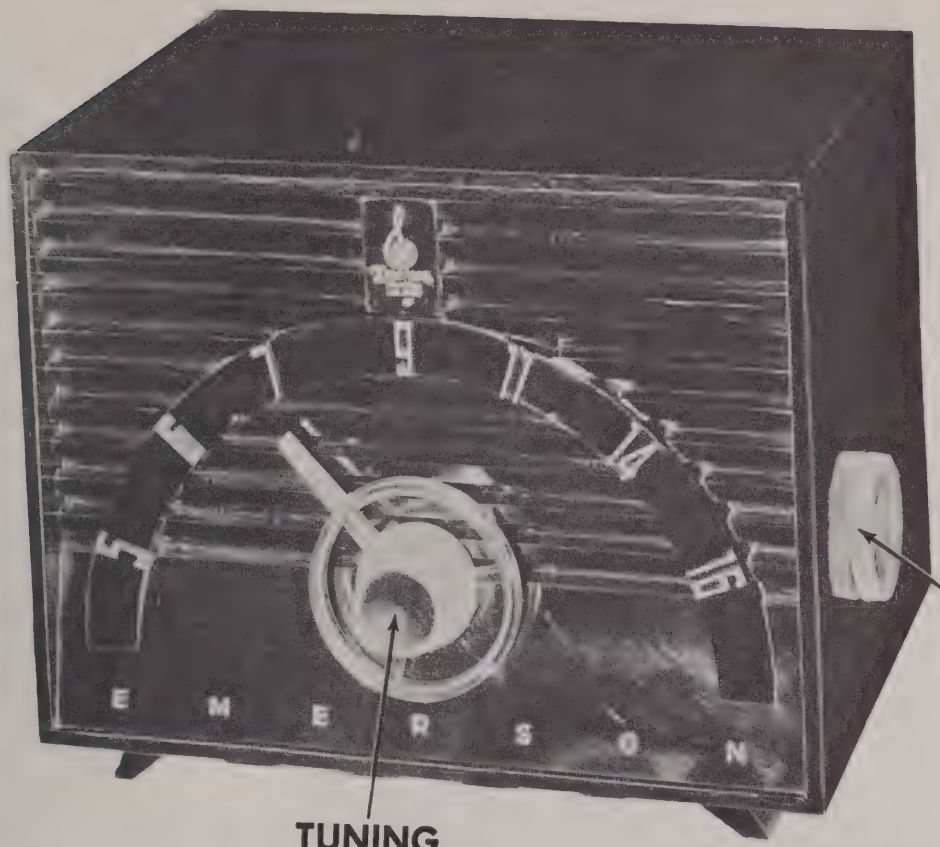
EMERSON MODELS 811B (Ch. 120228-B), 822B (Ch. 120232-B)



EMERSON MODELS 811B (Ch. 120228-B), 822B (Ch. 120232-B)

TRADE NAME	Emerson Models 811B (Ch. 120228-B), 822B (Ch. 120232-B)
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N.Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.005MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	Direct	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 811B (Ch. 120228-B)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	12AT6 used as an alternate
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	50	150	925276			TCD497	TDL-5030-150	FMD-301	
B	30	150							
C2	.05	400	923554	DF-503		PT415	IMP4-S5	330415	
C3A	220		♦923028						
B	2000								
C	5000								
D	500								
E									
C4	.02	400	923524	DF-203	817-02	PT412	IMP4-S2	330412	
C5	.047	400	920625	DF-503		PT4147	IMP4-S47	3304147	
C6	.05	400	923554			PT415	IMP4-S5	330415	

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B and R5C are combined in one unit.
When replacing items separately, C3D and C3E should total 500MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500KΩ	½	390278					Volume & switch

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	340812	BTS-22K	
R3	120Ω	½	340272	BTS-120	
R4	3.3Meg	½	351332	BTS-3.3Meg	
R5A	6.8Meg	½	♦923028	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	150Ω	½	340292	BTS-150	
R7	1500Ω	1	380532	BTA-1500	
R8	3.3Ω	½	394156		Note 1
R9	39Ω	½	340152	BTS-39	Note 1

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D and C3E are combined in one unit.
Note 1. Used in Ch. 120232B.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: EMERSON PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.4KΩ	3.2Ω	734095 734096 ②	A-3332 ①	A-3025 ①	S-12X ①	Z1101 ①	26S58 ①	① Drill one new mounting hole. ② Used in Model 822B

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

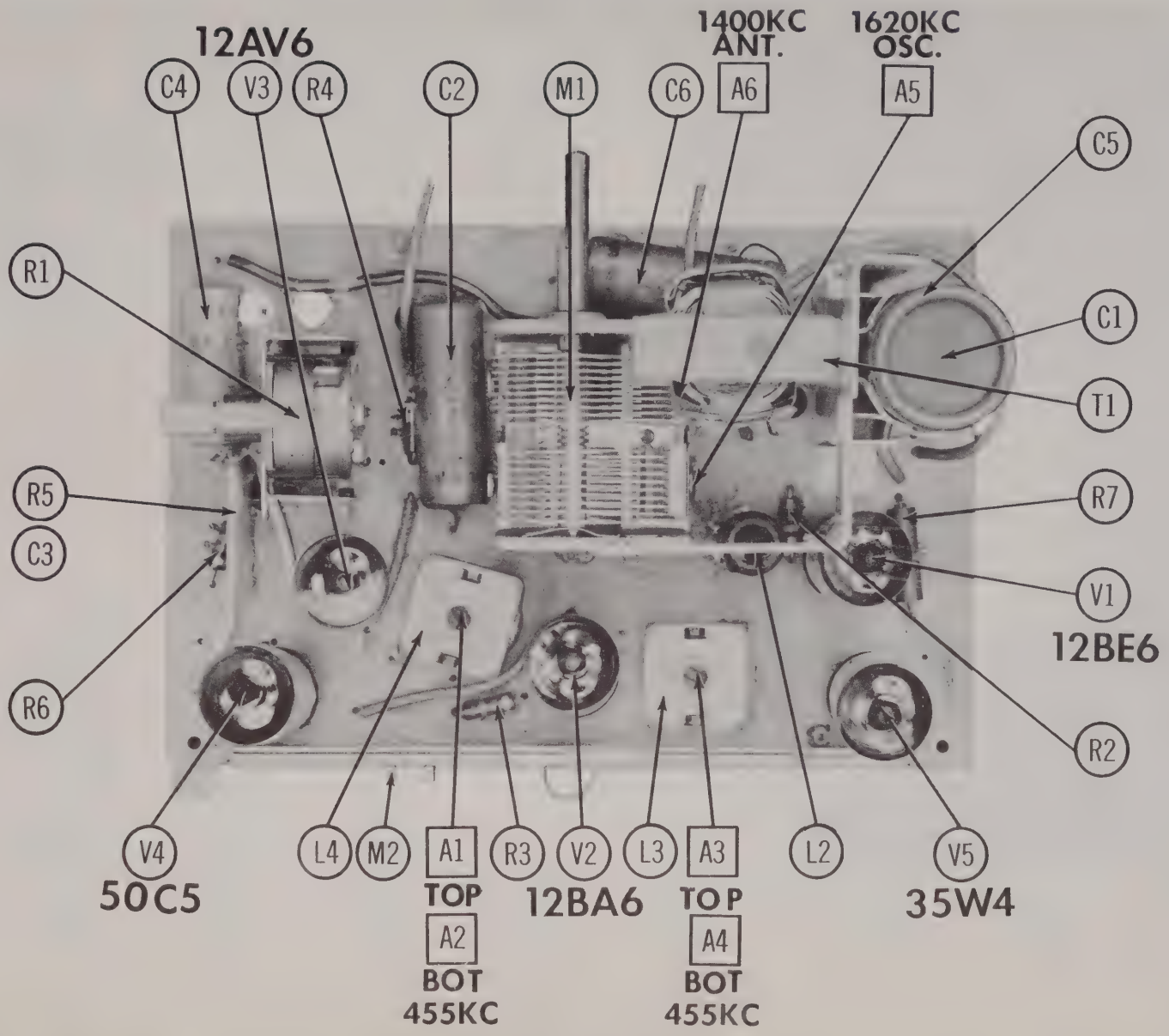
ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: EMERSON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3.2Ω	180124	35J6 ①	3A07 ①	① Cut corners off for mounting same as original unit.

COILS (RF-IF)

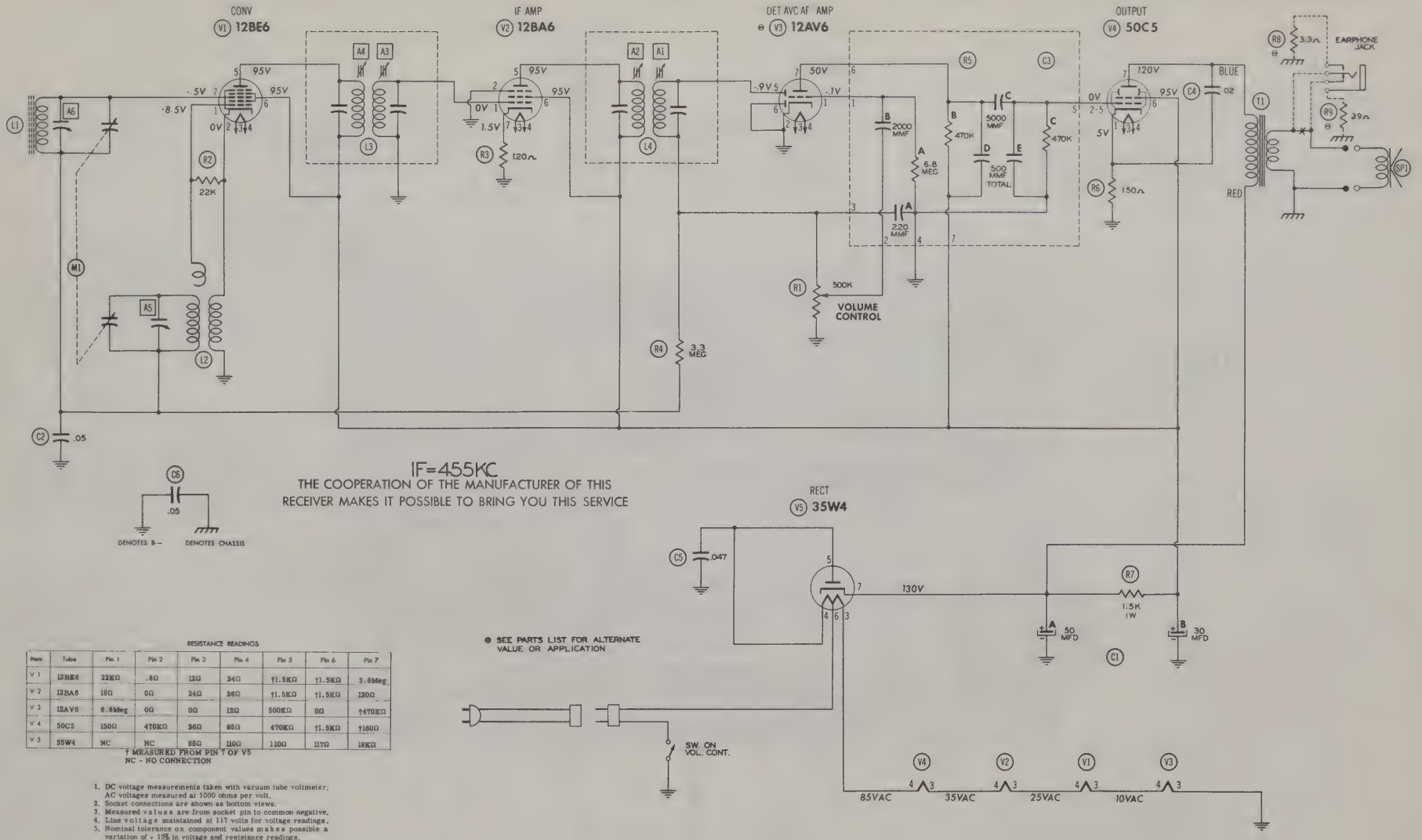
ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: EMERSON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.6Ω		700101				
L2	Osc. Coil	.9Ω	12.5Ω	716091				
L3	Input IF	17Ω	17Ω	720187	16-6758	BC-352	13-PC1	
L4	Output IF	17Ω	17Ω	720187	16-6758	BC-353	13-PC2	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M1	Tuning Cap.	900118	2 Gang - Capacity values unobtainable
	Cabinet	140590	Mahogany
	Cabinet	140590A	Ivory
	Cabinet	140590B	Ebony
	Cabinet	140590C	Forest Green
	Cabinet	140590D	French Grey
	Masonite Back	560373	Model 811B
	Masonite Back	560376	Model 822B
	Knob	460557	Tuning
	Knob	460569	On-off-volume
	Socket	583206	Interlock switch and line cord



CHASSIS TOP VIEW



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 2	12BA6	18Ω	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	120Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1.5KΩ	†160Ω
V 5	35W4	NC	NC	85Ω	110Ω	110Ω	117Ω	18KΩ

† MEASURED FROM PIN 7 OF V5
NC - NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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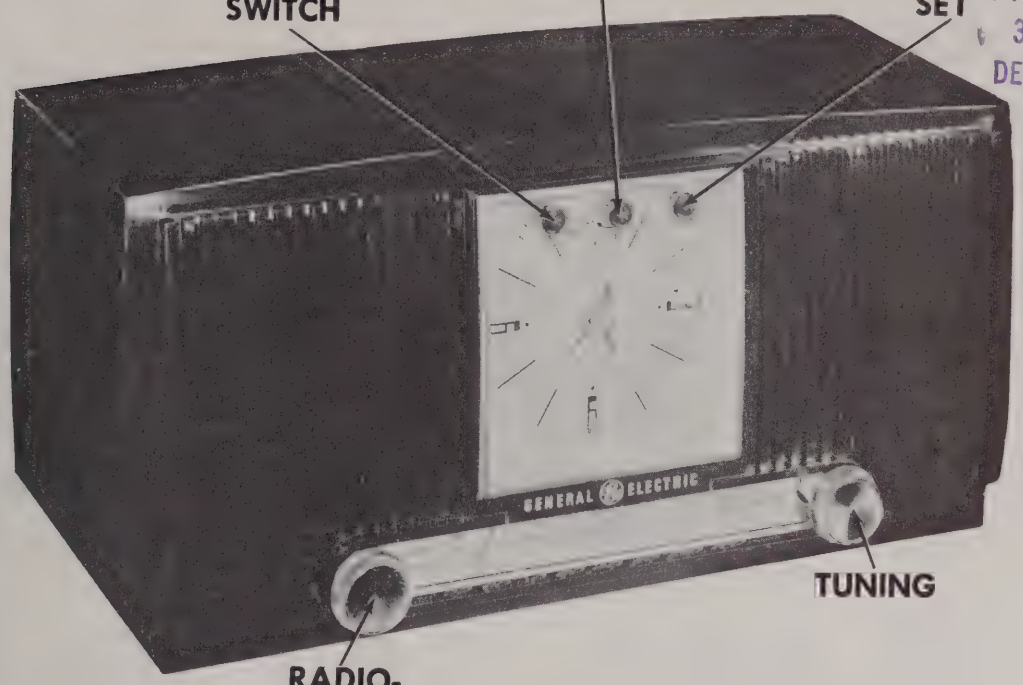
GENERAL ELECTRIC
MODELS 572, 573, 574, 575



GENERAL ELECTRIC
MODELS 572, 573, 574, 575

TRADE NAME	General Electric Models 572, 573, 574, 575
MANUFACTURER	General Electric Corp., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an inuslated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V2). Low side to chassis.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	"	"	"	A3, A4	"
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	50	150	RCE-149			TCD49	TDL-D50-150	FMD-1550	
B	50	150							
C2	47		RCW-3075						
C3	.05	400	UCC-045	DF-503		PT415	IMP4-S5	330415	
C4A	400		RCW-3048	D6-401	GP2K-401	UC-534		K-1340	
B	2000			DD-202	801-002	DC-522		C-1220	
C	220			D6-221	GP2K-221	UC-5322		K-1322	
D	5000			DD-502	811-005	DC-525		C-1250	
C5	.022	600	RCN-050	DF-203	817-02	PT6122	IMP6-S22	3306122	
C6	.047	600	RCN-053	DF-503		PT6147	IMP6-S47	3306147	
C7	.05	200	UCC-045	DF-503		PT415	IMP2-S5	330215	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	RRC-256				UT-443	Radio, phono volume - tapped @ 500KΩ

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	URD-081	BTS-22K	
R3	2.2Meg	½	URD-129	BTS-2.2Meg	
R4	6.8Meg	½	URD-141	BTS-6.8Meg	
R5	470KΩ	½	URD-113	BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	470KΩ	½	URD-113	BTS-470K	
R7	150Ω	½	URD-029	BTS-150	
R8	1500Ω	2	URF-053	BTB-1500	
R9	18Ω	½	URD-007	BTS-18	

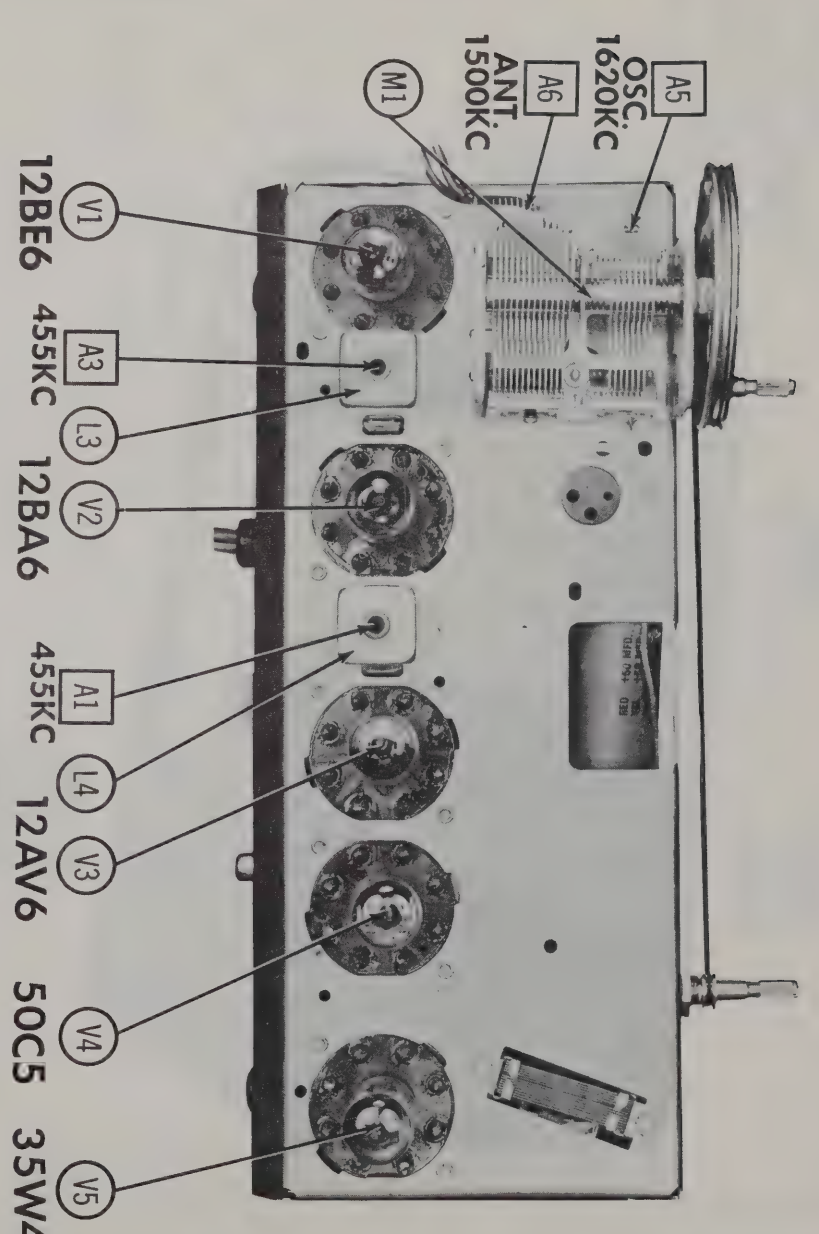
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.5KΩ	3.5Ω	RTO-138	A-3336 ①	A-3031 ①		Z1102 ①	24S50A①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: General Electric PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.5Ω	S-403D-7	ST-113 Mod. P4-X	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

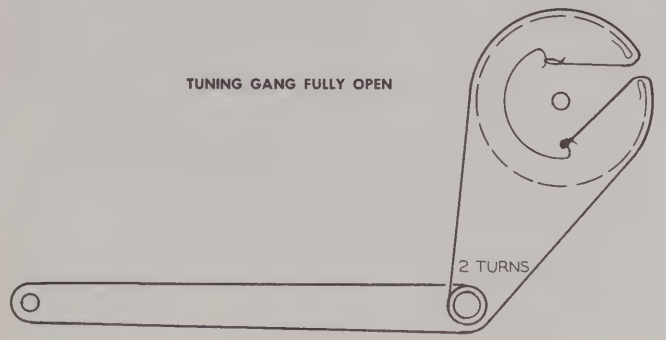
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.1Ω		RAB-243				Includes cabinet back
L2	Osc. Coil	.5Ω	6.5Ω	RLC-119	14-1074 *		71-OSC ■	
L3	Input IF	28Ω	28Ω	RTL-135	16-6758	BC-352	12-C1	
L4	Output IF	28Ω	28Ω	RTL-135	16-6758	BC-353	12-C2	

* Leads sufficient mounting support.
■ Drill mounting hole.

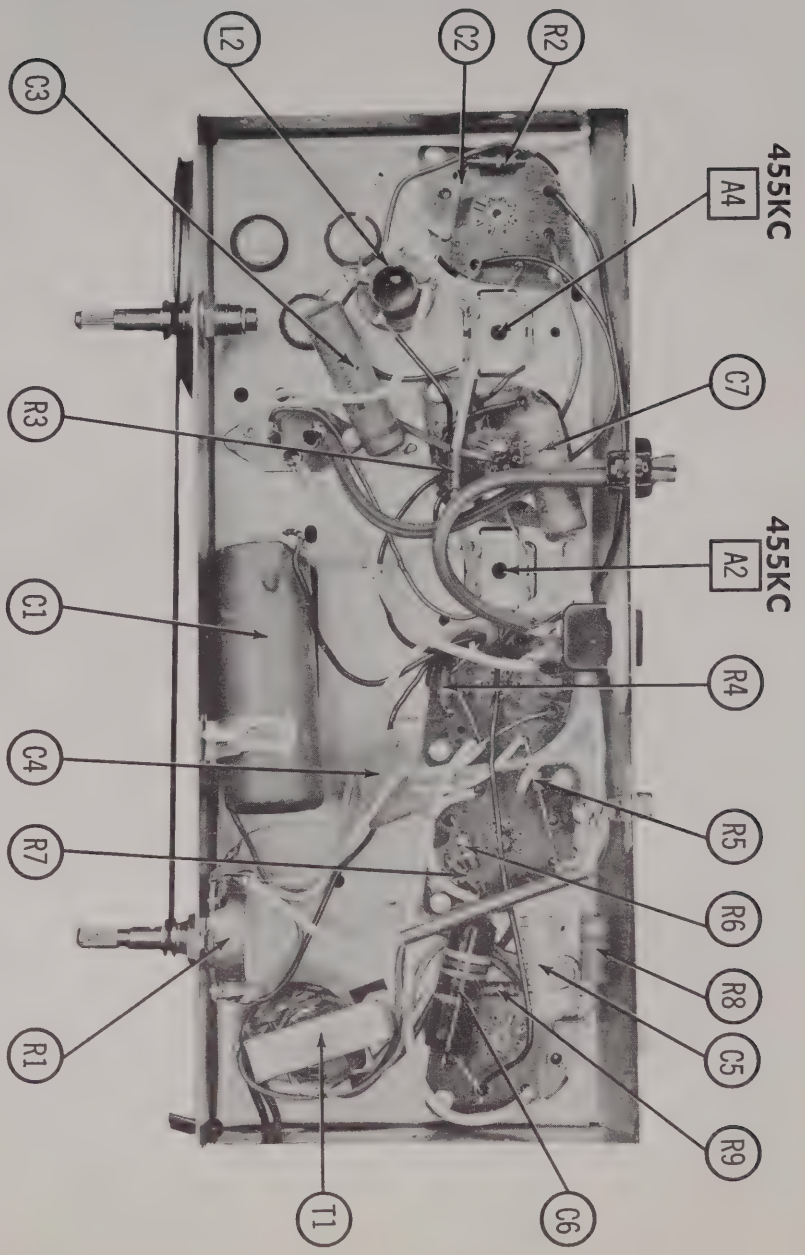
MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	Tuning Cap.	RCT-063	2 gang (24-470MMF, 22-150MMF)
M2	Clock Assy.	RZC-037	Models 572 & 574, less bezel and crystal
	Clock Assy.	RZC-038	Model 573 & 575
	Cabinet	RAU-365	Model 572
	Cabinet	RAU-366	Model 574
	Cabinet	RAU-367	Model 573
	Cabinet	RAU-368	Model 575
	Knob	RDK-425	Volume & tuning
	Knob	RZK-009	Clock-Alarm, sleep or switch set - Model 573
	Knob	RZK-010	Clock-Alarm, sleep or switch set - Model 575
	Knob	RZK-026	Clock-Alarm, sleep or switch set - Model 572
	Knob	RZK-027	Clock-Alarm, sleep or switch set - Model 574
	Bezel Ring	RZA-009	Clock-Models 572, 573, 574
	Bezel Ring	RZA-010	Clock-Model 575
	Crystal	RZW-013	Clock-Models 572 & 574
	Crystal	RZW-014	Clock-Models 573 & 575
	Dial Scale	RDS-127	
	Dial Pointer	RDP-074	



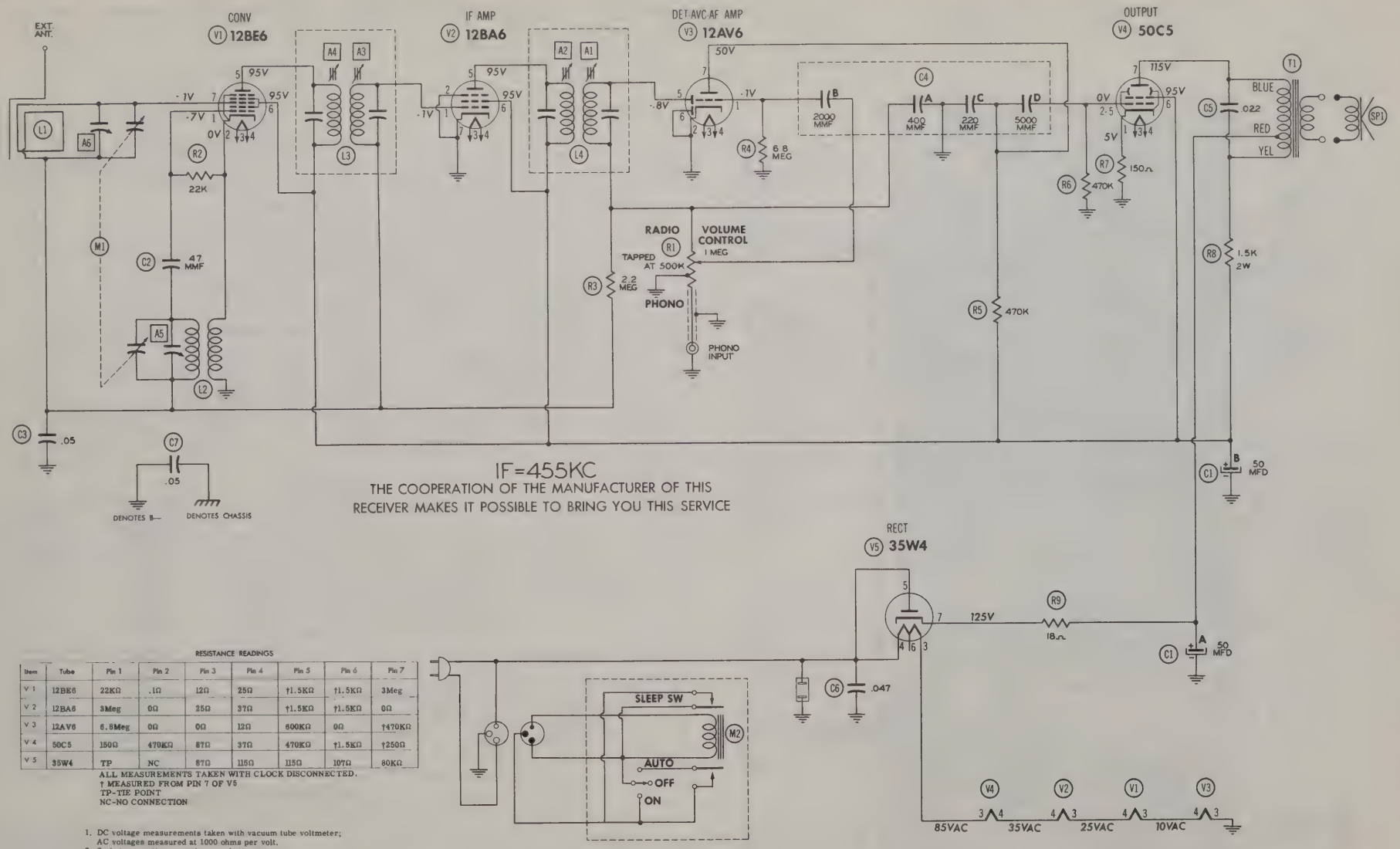
DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 572

GENERAL ELECTRIC MODEL 572



IF=455KC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.1Ω	12Ω	25Ω	†1.5KΩ	†1.5KΩ	3Meg
V 2	12BA6	3Meg	0Ω	25Ω	37Ω	†1.5KΩ	†1.5KΩ	0Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	600KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	87Ω	37Ω	470KΩ	†1.5KΩ	†250Ω
V 5	35W4	TP	NC	87Ω	115Ω	115Ω	107Ω	80KΩ

ALL MEASUREMENTS TAKEN WITH CLOCK DISCONNECTED.
† MEASURED FROM PIN 7 OF V5
TP-TIE POINT
NC-NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PHOTOFACT* Folder

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MUNTZ
MODELS 421T1, 421T1N, 421T2 (Ch. 47A4)

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MODEL 421T1N

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DATE 4–55 SET 274 FOLDER 10

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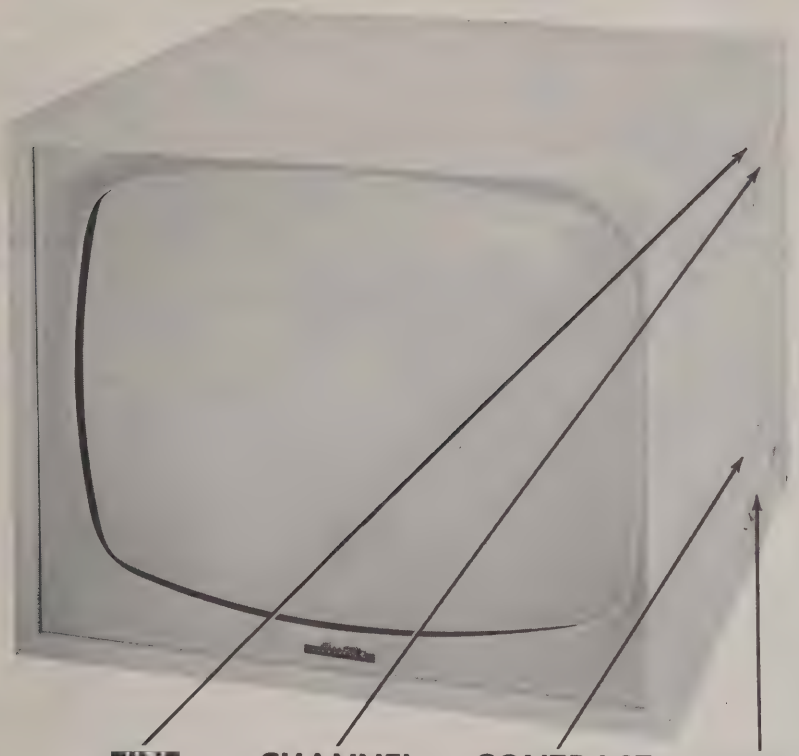

MUNTZ
MODELS 421T1, 421T1N, 421T2 (Ch. 47A4)

MUNTZ MODEL 421T1N

TRADE NAME	Muntz Models 421T1, 421T1N, 421T2 (Ch. 47A4)
MANUFACTURER	Muntz TV, Inc., 1000 Gray Ave., Evanston, Ill.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.02 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 46.1MC, Sound IF 41.6MC (Intercarrier)

INDEX

Alignment Instructions 10
Disassembly Instructions 15
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet-Rear View 11
Capacitor Identification 16
Chassis-Top View 3
RF Tuner 7
Photographs (Cont)
Resistor & Inductor Identification 4, 9
Resistance Measurements 8
Servicing in the Field 15
Schematic 2
Trouble Shooting Aids 6, 7
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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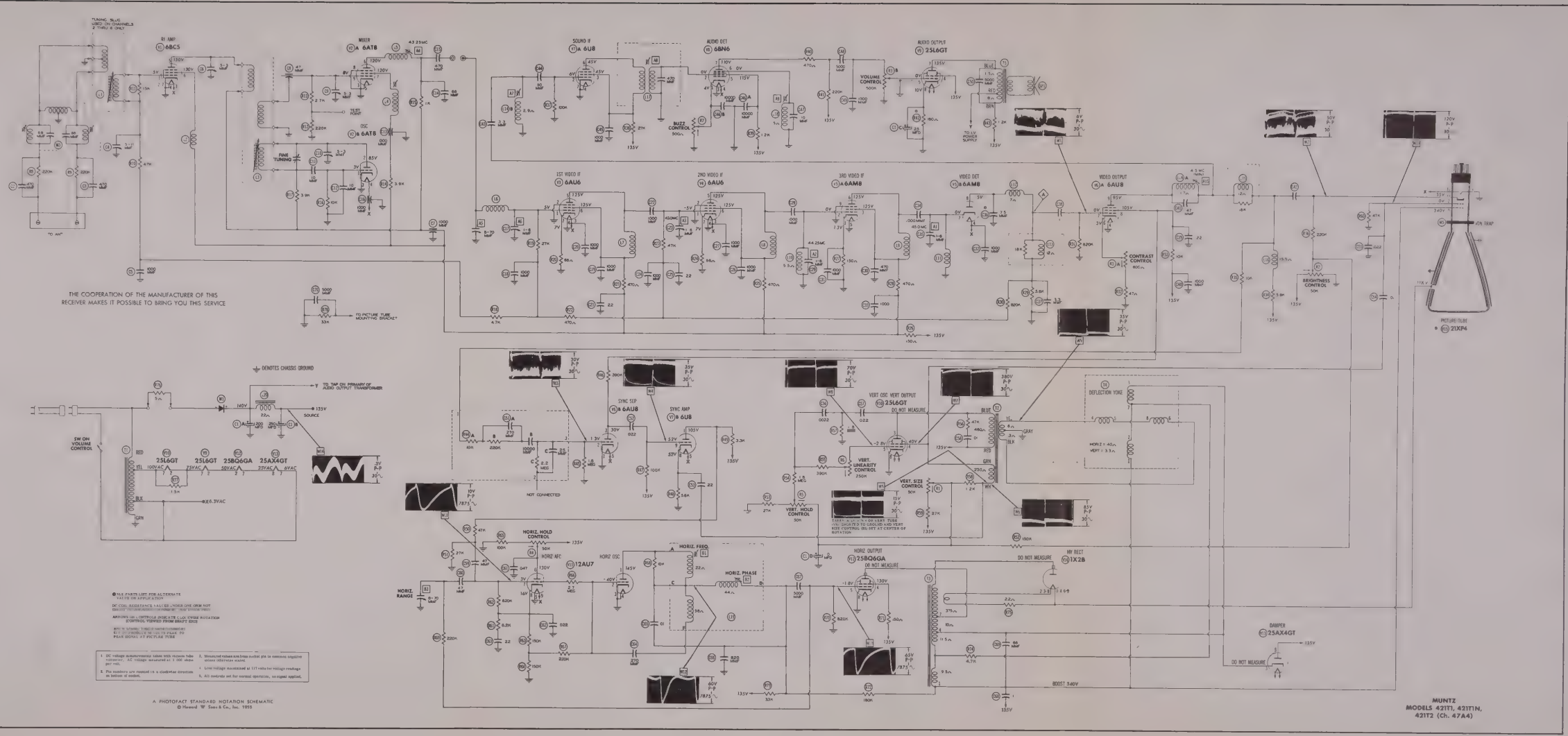
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP V1 6BC5
MIXER V7A 6AT8
OSC V7B 6AT8
SOUND IF V7A 6U8
AUDIO DET V8 6BN6
AUDIO OUTPUT V9 25L6GT
1ST VIDEO IF V1 6AU6
2ND VIDEO IF V8 6AU6
3RD VIDEO IF V3 6AM8
VIDEO DET V5 6AM8
VIDEO OUTPUT V6 6AU8
SYNC SEP V6 6AU8
SYNC AMP V7 6U8
VERT OSC VERT OUTPUT V10 25L6GT
HORIZ OSC V11 12AU7
HORIZ OUTPUT V11 25BQ6GA
HV RECT V12 1X2B
DAMPER V11 25AX4GT
PICTURE TUBE V13 21XP4
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
V11 25L6GT V12 25L6GT V13 25BQ6GA V14 25AX4GT
MUNTZ MODELS 421T1, 421T1N, 421T2 (Ch. 47A4)
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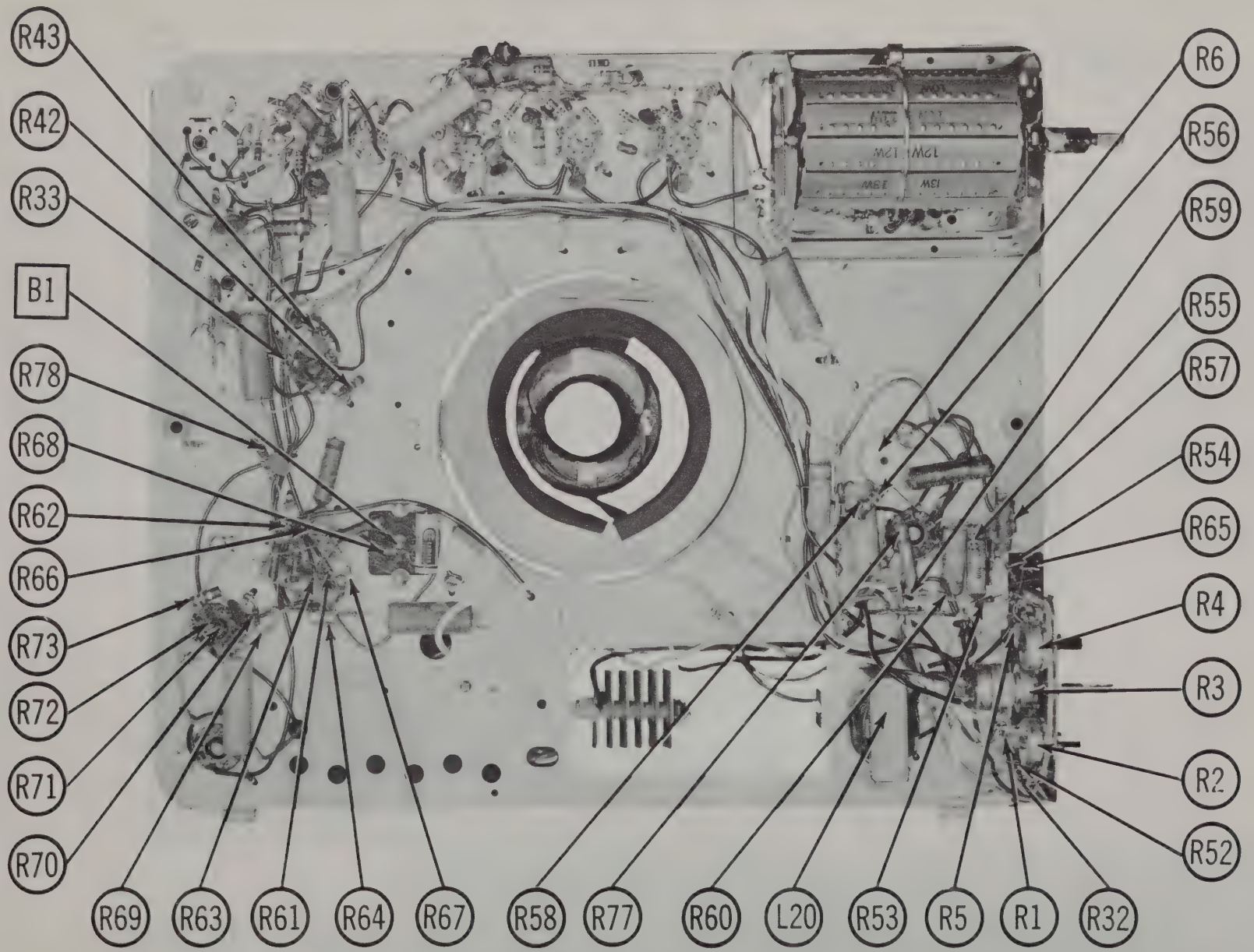
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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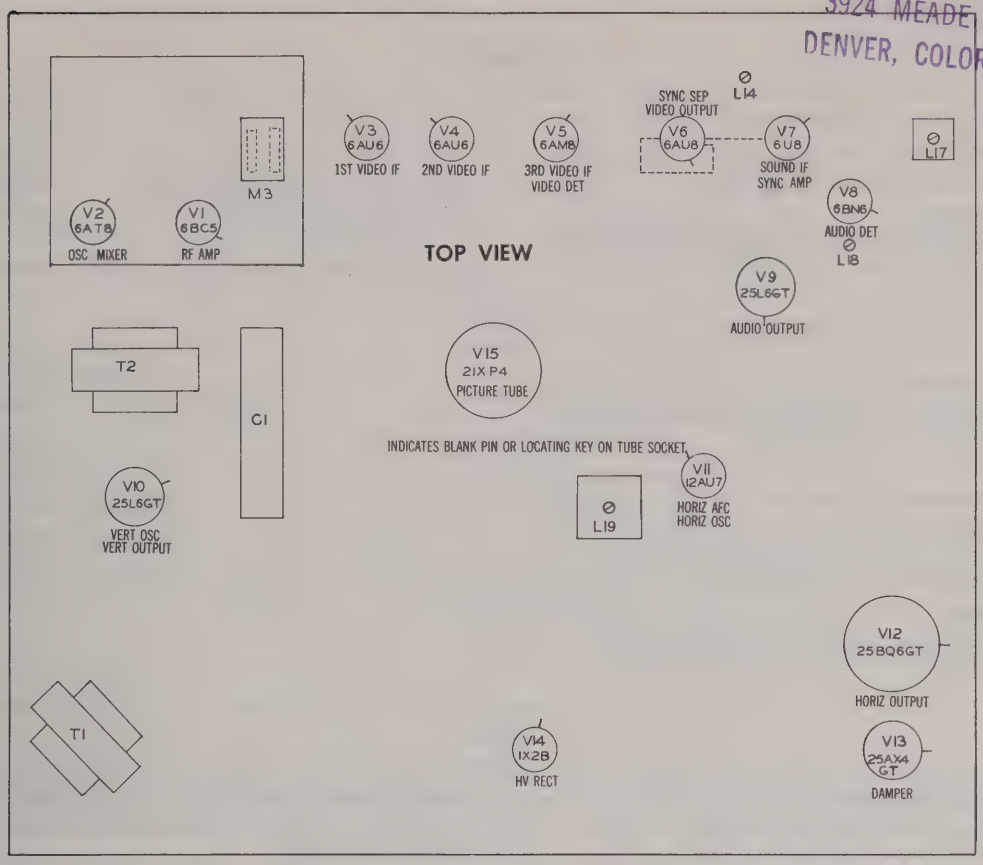
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

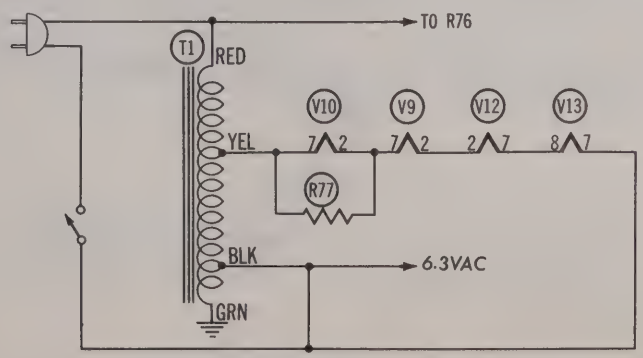
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifier (M1)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V15**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10**
No horiz. sync - **V7, V11**
No vert. or horiz. sync - **V6, V7**

SWEEP FAILURE
No raster, has sound - **V11, V12, V13, V14, V15**
No vertical deflection - **V10**
Poor vert. linearity or foldover - **V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, V14, M1**
Vert. off freq. - **V7, V10**
Horiz. off freq. - **V7, V11**

NOTE: Since this receiver employs tubes used in series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



MUNTZ
MODELS 421TI, 421TIN, 421T2 (Ch. 47A4)

SET 274 FOLDER 10

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check M1. Check T3, T4A, C68, C66, C67, R71, R74 and other associated components.

DRIVE LINES

Check by substitution V12 and V13. Check C65, C66, C67, T3, R71 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V12 and V13. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V11, V12 and V13. Check C62, C63 and R61 for open. Check adjustments B1, B2, B3 and other associated components.

XMAS TREE EFFECT

Check by substitution V11, V12 and V13. Check T3 and T4 for internal arcing. Check L19, C59, C60, C64, R69, R67 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V10. Check T2, T4B, C56, C57, C53, C55, R59, R58, R1, R53, R54 and other associated components.

INSUFFICIENT SWEEP

Substitute V10. Check vertical size and vertical linearity for proper operation.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6 and V7. Check C51A and C51B, C52, R46, R49 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V10. Check C53, R53, R54, T2 and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Substitute V11. Check adjustments B1 and B3. Check C59, C65, C64 and other associated components.

HORIZONTAL BENDING

Check by substitution V6, V7 and V11. Check components associated with V11.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C38, C39, C40, C42, R34, R33, L15, L16 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A10. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check contrast control. Check C38, C42, L15, L13 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check video detector network. Check C38, C42, L12, L13 and other associated components.

SMEAR

Substitute V6. Check L12, L13, L15, C38, C42 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stage V9 using audio signal generator. Apply audio signal across R3B.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C48, C49, C50, C1C, R43, R42, R41, R40, T5, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments A9 R7 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If V9, V10, V12 and V13 fail to light, check one of these tubes. These tubes are in series. If filaments light, check M1 and R76. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check M1 and R76. Check B+ filter and decoupling network.

TROUBLE SHOOTING AIDS (cont)

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HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V11, V12, V13 and V14. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T3, T4, C68, C69, R71 and other associated components.	Check L19, C61, C64, C65, C67, R72, R73, R4 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V12 and V13. Check M1, R76, R71, R72, C66, C67 and other associated components.

BLOOMING

Check by substitution V12, V13 and V14. Check M1, R76, R71, R74 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

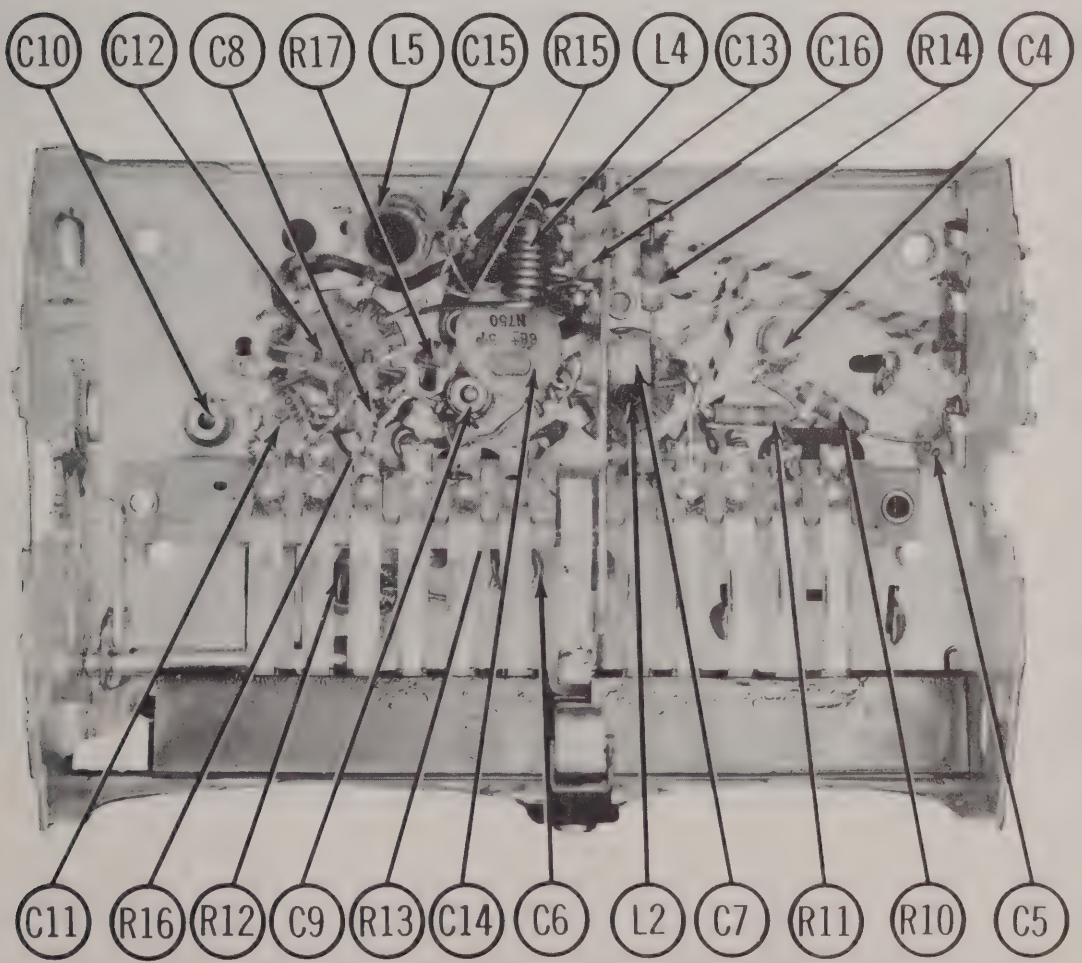
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

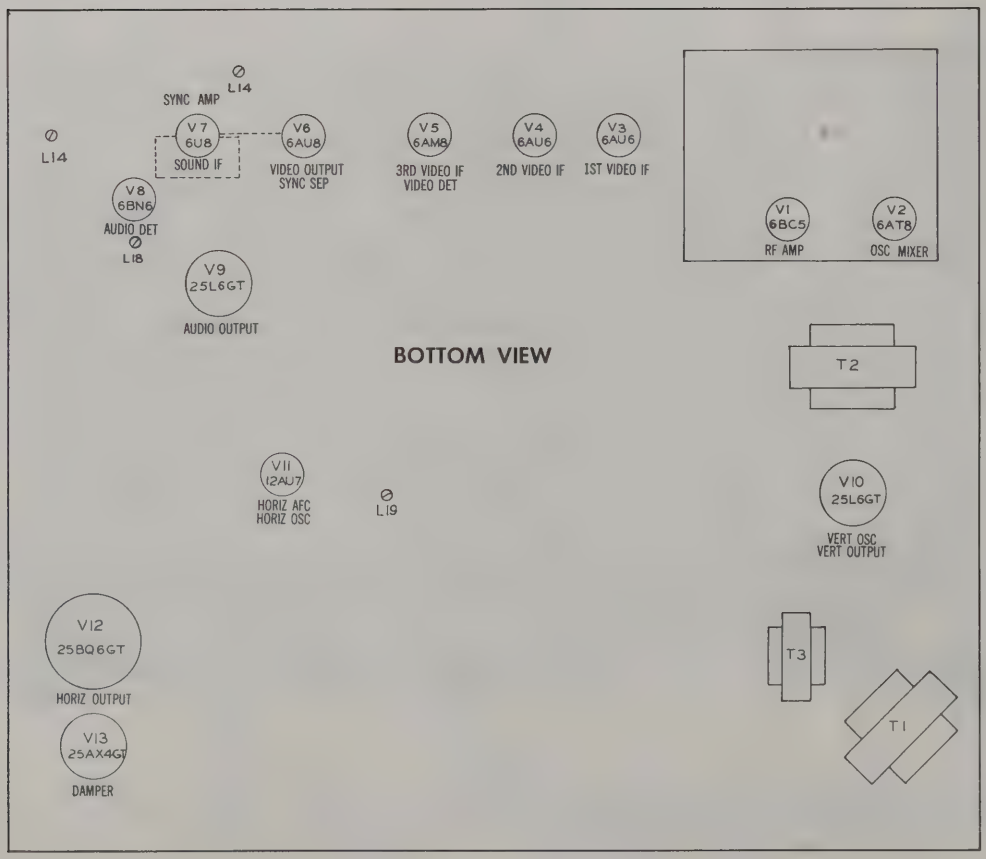


RF TUNER BOTTOM VIEW

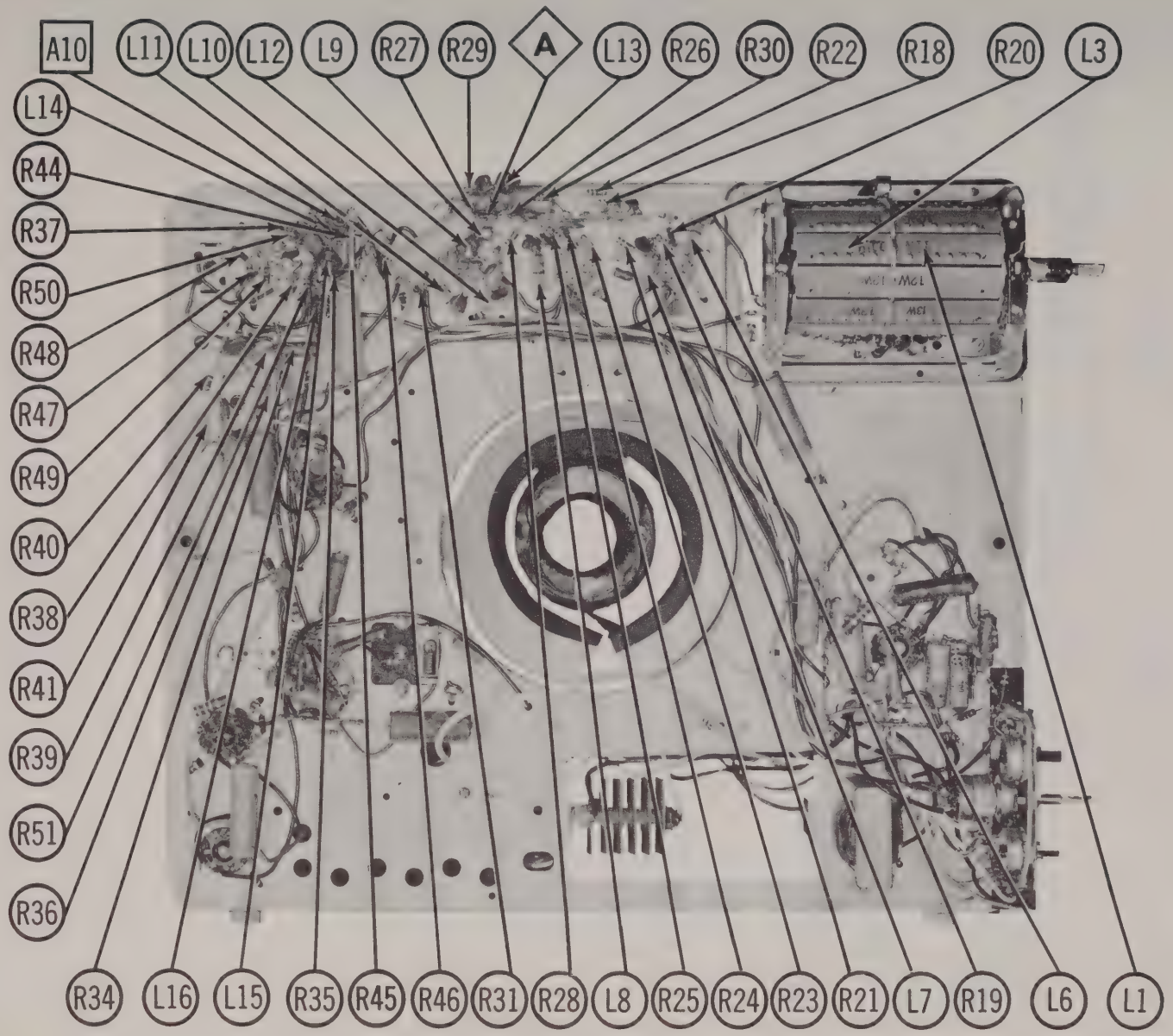
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	820KΩ	0Ω	.1Ω	0Ω	†172Ω	†172Ω	0Ω		
V 2	6AT8	10KΩ	†3.9KΩ	0Ω	.1Ω	0Ω	†1KΩ	†3.9KΩ	0Ω	223KΩ
V 3	6AU6	820KΩ	0Ω	.1Ω	0Ω	†600Ω	†600Ω	68Ω		
V 4	6AU6	820KΩ	0Ω	.1Ω	0Ω	†600Ω	†600Ω	68Ω		
V 5	6AM8	150Ω	5.5Ω	†600Ω	.1Ω	0Ω	†600Ω	.8Ω	5.6KΩ	0Ω
V 6	6AU8	0Ω	1.8Meg	†400KΩ	0Ω	.1Ω	300Ω	820KΩ	†10KΩ	†5.6KΩ
V 7	6U8	†3.3KΩ	100KΩ	†27KΩ	0Ω	.1Ω	†27KΩ	0Ω	5.6KΩ	†100KΩ
V 8	6BN6	250Ω	.3Ω	0Ω	.1Ω	†1.2KΩ	5Ω	†220KΩ		
V 9	25L6GT	TP	15Ω	†115Ω	†22Ω	300KΩ	TP	15Ω	180Ω	
V 10	25L6GT	NC	15Ω	†500Ω	†30KΩ	2.2Meg	NC	5Ω	0Ω	
V 11	12AU7	▲180KΩ	370KΩ	0Ω	0Ω	0Ω	†2.5KΩ	900KΩ	300KΩ	.1Ω
V 12	25BQ6GA	TP	15Ω	TP	†170Ω	820KΩ	TP	9Ω	0Ω	TOP CAP ▲10Ω
V 13	25AX4GT	NC	NC	200KΩ	NC	†22Ω	NC	.1Ω	9Ω	
V 14	1X2B		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲385Ω
V 15	21XP4	0Ω	47KΩ	PIN 10 ▲20Ω	PIN 11 †200KΩ	PIN 12 .1Ω				

† MEASURED FROM OUTPUT OF M1
TP - TIE POINT
NC - NO CONNECTION
▲ MEASURED FROM PIN 3 OF V13



TUBE PLACEMENT CHART



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MUNTZ MODELS 4211T, 4211TN, 4212 (Ch. 47A4)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect negative lead of a 3 volt battery to the ungrounded side of C25. Positive lead to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not used.	45.0MC	Any non-interfering channel.	Use VTVM. Connect DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator to prevent overload.
2	"	"	"	44.25MC	"	"	A2	"
3	"	"	"	43.0MC	"	"	A3	"
4	"	"	"	43.25MC	"	"	A4	"
5	"	"	44MC (10MC Swp)	46.1MC 42.5MC 41.6MC	"	High side to point (A) thru 10KΩ. Low side to chassis.	A5, A6	Adjust A5 and A6 for response curve similar to Fig. 1. SLIGHTLY retouch A1 thru A6 to obtain desired response as in Fig. 1.

SOUND IF ALIGNMENT

Connect an attenuator pad in series with the receiver antenna.
Tune in a tone modulated TV signal and adjust the attenuator until the signal falls below the limiting level of the 6BN6 limiter-detector, as evidenced by a hiss similar to regeneration.
Adjust the sound take-off transformer (A7), the sound IF coil (A8) and the quadrature coil (A9) for maximum sound of best quality.
Adjust the buzz control (R7) for minimum intercarrier buzz.
If during the sound IF alignment the signal rises above the limiting level (hiss disappears), increase the attenuation until the hiss returns.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6	.01MFD	High side to point (A). Low side to chassis.	Not used.	4.5MC (400∿ Mod)	Any non interfering channel.	Vert. amp. thru detector (Fig. 2) to pin 11 of picture tube. Low side to chassis.	A10	Adjust for minimum 400∿ indication on scope.

TUNER ALIGNMENT

The tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

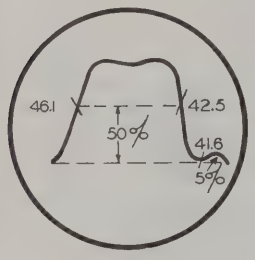


FIG. 1

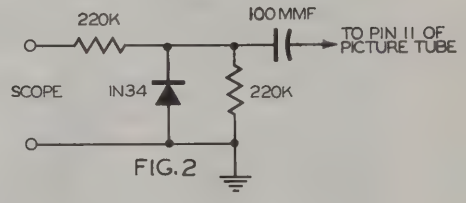


FIG. 2

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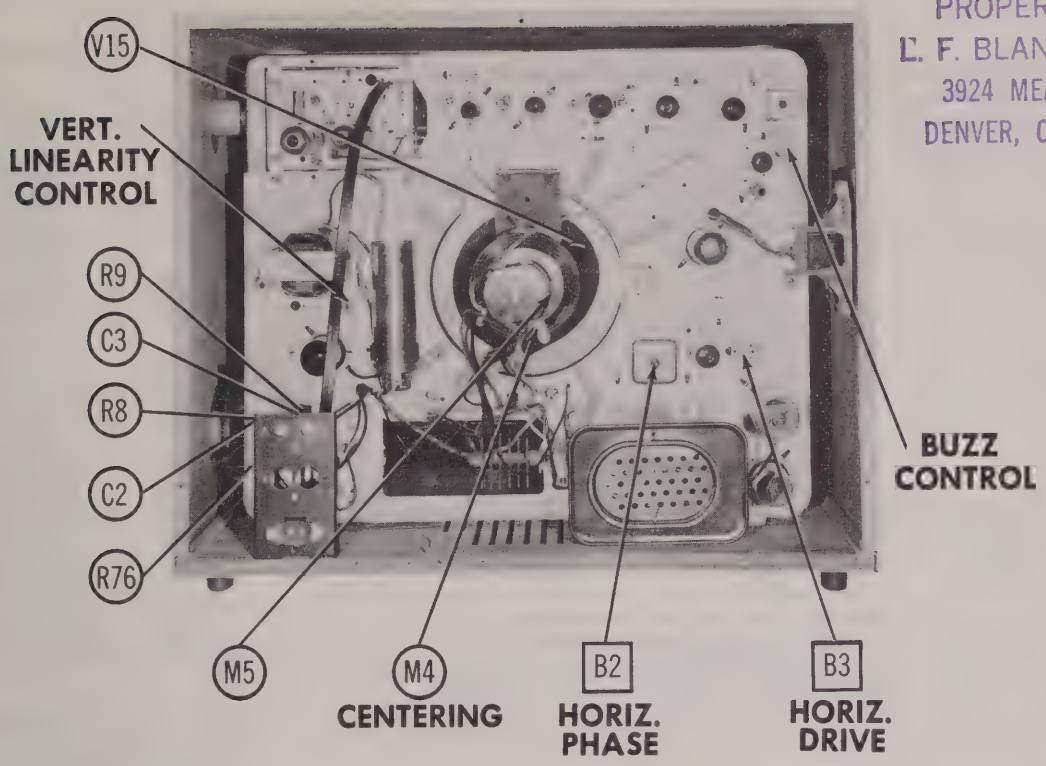


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

(1) Turn the horizontal frequency slug (B1) and the horizontal phase slug (B2) at their maximum counter clockwise positions.

(2) Short together terminals "C" and "D" of the horizontal oscillator, L19.

(3) Set the horizontal range (B3) to its maximum clockwise position.

(4) Set horizontal hold control (R4) to its maximum counter clockwise position.

(5) Adjust B1 clockwise until picture just locks in horizontally.

(6) Remove short from "C" and "D" of L19. If picture loses sync with short removed, adjust B2 clockwise until picture falls into sync.

(7) Connect the vertical input lead of an oscilloscope to terminal "C" of L19. Adjust B2 clockwise until the broad and narrow peaks are of equal amplitude as shown in Fig. 3. While adjusting B2 keep the picture in sync by turning the horizontal hold control clockwise. Disconnect scope from receiver.

(8) Set the horizontal hold control clockwise and adjust B1 until picture locks in and remains in sync while switching off channel and back.

(9) The horizontal holding action should now be as follows:

(a) With horizontal hold control fully counter clockwise switch off channel and back. The picture should be out of sync or just pulling out of sync.

(b) With horizontal hold fully clockwise the picture may lose sync. When switching off channel and back.

(c) With the horizontal hold at is mid-range position the picture should fall in sync when switching off channel and back.

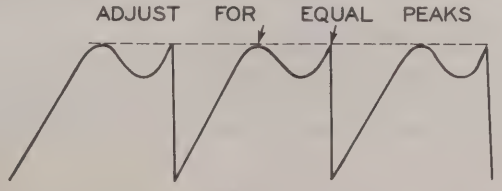


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MUNTZ PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	TBD	
V2	Osc.-Mixer	6A7S	6A7S	8DW	
V3	1st. Video IF Amp.	6AU6	6AU6	TBK	
V4	2nd. Video IF Amp.	6AU6	6AU6	TBK	
V5	3rd. Video IF Amp., Video Det.	6AM8	6AM8	9CY	
V6	Video Output, Sync Separator	6AU6	6AU6	8AK	
V7	Sound IF Amp.,- Sync Amp.	6U8	6U8	8AK	
V8	Audio Detector	6BN6	6BN6	TDF	
V9	Audio Output	25L6GT	25L6GT	T8	
V10	Vert. Osc.-- Vert. Output	25L6GT	25L6GT	T8	
V11	Horiz. AFC-Horiz. Osc.	12AU7	12AU7	8A	
V12	Horiz. Output	25D6GA	25D6GA	6AM	
V13	Damper	25AX4GT	25AX4GT	4CG	
V14	HV Rectifier	1X2B	1X2B	8Y	

CATHODE-RAY TUBE

ITEM No.	MUNTZ PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V15	21KP4	21KP4		21KP4		12L	① Aluminized
		21KP4A ①	21KP4A ①	21KP4A ①		12L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	MUNTZ PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	NOTES
C1A	+200	150	CE-0036			FP-417.1	TM-4120	D-095	
B	+250	150				TC49		CSD-1520	
C	25	25							
D	+10	150							
C2	470			D6-471	GP2K-471	UC-5347			
C3	470			D6-471	GP2K-471	UC-5347			
C4	5-11								
C5	1000			DD-102	801-001	DC-521			
C6	.5-3			S29-3	31L5-01-GR5	CT565A			
C7	1000								
C8	47								
C9	.5-3			S29-3	31L5-01-GR5	CT565A			
C10	.5-3			S38-3	31L5-01-GR5	CT565A			
C11	10								
C12	10								
C13	1000								
C14	68			TCN-68	N750L-680	NT-5446			
C15	470			DD-471	831-471	UC-5347			
C16	1000								
C17	1-5		CT-0021	S29-5					
C18	1000			DD-102	801-001	DC-521		K-1210	
C19	1000			DD-102	801-001	DC-521		K-1210	
C20	1000			DD-102	801-001	DC-521		K-1210	
C21	.22	300	CP-0055			PT4022	IMP2-P22	3302022	
C22	1000			D6-102	GP3L-102	UC-521		K-1210	
C23	1-6		CT-0022	S29-6					
C24	1000			DD-102	801-001	DC-521		K-1210	
C25	.22	200	CP-0055			PT4022	IMP2-P22	3302022	
C26	1000			DD-102	801-001	DC-521		K-1210	
C27	1000			DD-102	801-001	DC-521		K-1210	
C28	1000			D6-102	GP3L-102	UC-521		K-1210	
C29	1-6		CT-0022	S29-6					
C30	470		CT-0127	DD-471	831-471	UC-5347		K-1347	
C31	1000			DD-102	801-001	DC-521		K-1210	
C32	1000			DD-102	801-001	DC-521		K-1210	
C33	1000			DD-102	801-001	DC-521		K-1210	
C34	1000			DD-102	801-001	DC-521		K-1210	
C35	1-6		CT-0022	S29-6					
C36	7.5								Note 1
C37	3.3		CC-0121	TCZ-3.3	N90A-3R3	ZT-5533			
C38	.1	400	CP-0034	DF-104		PT401	IMP4-P1	330401	
C39	.22	200	CP-0055			PT4022	IMP2-P22	3302022	
C40	1000			DD-102	801-001	DC-521		K-1210	
C41	47		CC-0125		N06SL-470				
C42	.1	400	CP-0034	DF-104		PT401	IMP4-P1	330401	
C43	3.3		CC-0121	TCZ-3.3	N90A-3R3	ZT-5533			
C44	50		CC-0124	D6-500	GP2K-500	UC-545		K-1450	
C45	1000			DD-102	801-001	DC-521		K-1210	
C46A	1000		CC-0122	DD3-103	811-01	DC-511			
B	10000				811-01	DC-511			
C47	10		CC-0123		N09K-100				
C48	5000		CC-0060	DD-502	811-005	DC-525	IMP8-D5	C-1250	
C49	1000			DD-102	801-001	DC-521	IMP8-D1	K-1210	
C50	5000		CC-0060	DD-502	811-006	DC-525	IMP8-D5	C-1250	
C51A	270								
B	10000		eCC-0120	ePC-262					
C	25								
C52	.022	300	CP-0052	DF-203	817-02	PT4122	IMP4-S22	3304122	
C53	.22	200	CP-0055			PT4022	IMP2-P22	3302022	
C54	.01	600	CPM-0101	D6-103	GP2-333-103	PT601	IMP6-S1	330611	
C55	.022	300	CP-0052	DF-203	817-02	PT4122	IMP4-S22	3304122	
C56	.0022	600	CP-0056					CB-1232	
C57	.022	600	CP-0053	DF-203	817-02	PT6122	IMP4-S22	3306122	
C58	.01	600	CPM-0101	D6-103	GP2-333-103	PT601	IMP6-S1	330611	
C59	47		CC-0125		N06SL-470				
C60	47		CC-0125						
C61	.047	400	CP-0061	DF-503		PT4147	IMP4-S47	3304147	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	MUNTZ PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.
C62	.022	300	CP-0052	DF-203	817-02	PT4122	IMP4-S22	3304122
C63	.22	200	CP-0055			PT4022	IMP2-P22	3302022
C64	270		CC-0095					
C65	.01	600	CP-0018	D6-103	GP2-333-103	PT601	IMP6-S1	330611
C66	220	500	CM-0048					K2K-1283
C67	5000		CC-0060	DD-502	811-005	DC-525		C-1250
C68	.1	400	CP-0034	DF-104		PT401	IMP4-P1	330401
C69	68	3000		DD30-680	2KV-680			
C70	5000	1500	CC-0133	DD15-502	1KSKV-472			

Note 1. Some versions use 2.2MMF in this application (part #CC-0121).
* Items C51A, C51B, C51C, R44A, R44B and R44C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	MUNTZ PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	VC-0051	QU-133	A47-50K-S	BX-31	SU-35	Vert. Size
B	Shaft		Not Req.	SQ	FS2-1/4	Not Req.	Not Req.	Attach to R1A
R2A	50KΩ	½	VC-0051	QU-133	A47-50K-S	BX-31	SU-35	Brightness
B	Shaft		Not Req.	SQ	FS2-1/4	Not Req.	Not Req.	Attach to R2A
R3A	600Ω	½	VC-0052	*QU-832	RTV-508	J3-2	UP15L	Contrast - Panel
B	500KΩ	½				B3-41	UB55A	Volume - Rear
C	Switch					KB-1	UB-56	Attach to R3B
R4A	50KΩ	½	VC-0051	QU-133	A47-50K-S	BX-31	SU-35	Horiz. Hold
B	Shaft		Not Req.	SQ	FS2-1/4	Not Req.	Not Req.	Attach to R4A
R5A	50KΩ	½	VC-0051	QU-133	A47-50K-S	BX-31	SU-35	Vert. Hold
B	Shaft		Not Req.	SQ	FS2-1/4	Not Req.	Not Req.	Attach to R5A
R6A	250KΩ	½	VC-0064	QU-135	A47-250K-S	AB-50	SU-46	Vert. Linearity
B	Shaft		Not Req.	SQ	FS2-1/4	AK-1	Not Req.	Attach to R6A
R7	5000	1			39-500			Buzz-wire wound

* CONCENTRIC EQUIVALENT : K-5 KIT, BASE ELEMENTS & SHAFTS: B11-105 & P1-028 (Panel)
B12-133 & H3-115 (Rear)
T8-1 SWITCH

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	MUNTZ PART No.	IRC PART No.	NOTES
R8	220KΩ	½	RC-2203-18	BTS-220K	
R9	220KΩ	½	RC-2203-18	BTS-220K	
R10	470Ω	½	RC-4702-18	BTS-470K	
R11	15KΩ	½		BTS-15K	
R12	220KΩ	½	RC-2203-18	BTS-220K	
R13	2700Ω	½		BTS-2700	
R14	3900Ω	½		BTS-3900	
R15	1000Ω	½		BTS-1000	
R16	10KΩ	½	RC-1003-18	BTS-10K	
R17	3900Ω	½		BTS-3900	
R18	4700Ω	½	RC-4701-18	BTS-4700	
R19	27KΩ	½	RC-2703-18	BTS-27K	
R20	68Ω	½	RC-0683-18	BTS-68Ω	
R21	470Ω	½	RC-470-18	BTS-470	
R22	470Ω	½	RC-470-18	BTS-470	
R23	47KΩ	½	RC-4702-18	BTS-47K	
R24	68Ω	½	RC-068-18	BTS-68	
R25	470Ω	½	RC-470-18	BTS-470	
R26	150Ω	½	RC-150-18	BTS-150	
R27	150Ω	½	RC-150-18	BTS-150	
R28	470Ω	½	RC-470-18	BTS-470	
R29	5600Ω	½	RC-5601-18	BTS-5600	
R30	820KΩ	½	RC-8203-18	BTS-820K	
R31	820KΩ	½	RC-8203-18	BTS-820K	
R32	47Ω	½	RC-047-18	BTS-47	
R33	10KΩ	½	RC-1003-18	BTS-10K	
R34	5600Ω	½	RC-5601-12	BTH-5600	
R35	10KΩ	½	RC-1003-18	BTS-10K	
R36	220KΩ	½	RC-2203-18	BTS-220K	
R37	100KΩ	½	RC-1003-18	BTS-100K	
R38	27KΩ	½	RC-2703-18	BTS-27K	
R39	1200Ω	½	RC-1201-18	BTS-1200	
R40	470Ω	½	RC-470-18	BTS-470	
R41	220KΩ	½	RC-2203-18	BTS-220K	
R42	180Ω	1	RC-180-18	BTA-180	Note 1
R43	1200Ω	½	RC-1201-18	BTS-1200	

ITEM No.	RATING OHMS	RATING WATT	MUNTZ PART No.	IRC PART No.	NOTES
R44A	10KΩ	½	eCC-0139	BTS-10K	
B	220KΩ	½		BTS-220K	
C	2.2Meg	½		BTS-2.2Meg	
R45	1.8Meg	½	RC-1804-18	BTS-1.8Meg	
R46	390KΩ	½	RC-3903-18	BTS-390K	
R47	100KΩ	½	RC-1003-18	BTS-100K	
R48	5600Ω	½	RC-5601-12	BTS-5600	
R49	3300Ω	½	RC-3301-18	BTS-3300	
R50	47KΩ	½	RC-4702-11	BTS-47K	
R51	27KΩ	½	RC-2702-18	BTS-27K	
R52	150KΩ	½	RC-1503-18	BTS-150K	
R53	27KΩ	½	RC-2702-18	BTS-27K	
R54	1.8Meg	½	RC-1804-18	BTS-1.8Meg	
R55	390KΩ	½	RC-3903-18	BTS-390K	
R56	47KΩ	½	RC-4702-11	BTA-47K	
R57	1.8Meg	½	RC-1804-18	BTS-1.8Meg	
R58	1200Ω	½	RC-1201-18	BTS-1200	
R59	27KΩ	½	RC-2702-18	BTS-27K	
R60	47KΩ	½	RC-4703-18	BTS-47K	
R61	5300Ω	½	RC-5301-18	BTS-5300	
R62	820KΩ	½	RC-8203-18	BTS-820K	
R63	150KΩ	½	RC-1503-18	BTS-150K	
R64	150KΩ	½	RC-1503-18	BTS-150K	
R65	100KΩ	½	RC-1003-18	BTS-100K	
R66	2.7Meg	½	RC-2704-18	BTS-2.7Meg	
R67	220KΩ	½	RC-2203-18	BTS-220K	
R68	10KΩ	½	RC-1002-18	BTS-10K	
R69	220KΩ	½	RC-2203-18	BTS-220K	
R70	820KΩ	½	RC-8203-18	BTS-820K	
R71	1MΩ	½	RC-1004-18	BTS-1M	
R72	180KΩ	½	RC-1803-15	BTS-180K	
R73	33KΩ	1	RC-3303-11	BTA-33K	
R74	470KΩ	½	RC-4703-18	BTS-470K	
R75	2.2Ω	1	RW-002-18		
R76	5Ω	1	RW-005-13		
R77	1500Ω	2		BTB-1500	
R78	33KΩ	1	RC-3303-11	BTA-33K	

Note 1. Some versions may use a 1300 resistor in this application.
* Items R44A, R44B, R44C, C51A, C51B and C51C are combined in one unit.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI	RATING SEC 1	RATING SEC 2	MUNTZ PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⑤-.58A tap ④ 105VAC ⑤-.3A tap ④ 6.3VAC ⑤1.58A			TP-0027						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	MUNTZ PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Osc. & Output Trans.	TO-0040							
T3	Horiz. Output Trans.	TO-0039	FB414 ④		X664 ④				
T4A	Yoke-Horiz. (34MM)	LC-0082	DF803 ② ③	MDF-74② ③	214D1 ② ③	Y76F25 ③ ②	DY-10A ② ③	Y-11 ②③	Y-20-1 ② ③
B	Vert. (3.7MM)								

① Drill new mounting hole(s).
② Use original yoke cover and positioning device.
③ Use original yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL (CONNECTION)	Halldorson Replacement Connection	Merit Replacement Connection	RCA Replacement Connection	Ram Replacement Connection	Stancor Replacement Connection	Thordarson Replacement Connection	Triad Replacement Connection
7	2			2			
4	See Note ④			See Note ④			
7	7			7			
1	5			5			
Special Notes →	④			④			

④ Connect damper cathode to terminal #4, connect yoke (red lead) to terminal #8

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	MUNTZ PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T5	2.4KΩ	3.6Ω	Part of Spkr.	A-3330 ①	A-3031 ①		Z1O2 ①	24S50 ①	① Mount on chassis

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP	MUNTZ PART No.	JENSEN PART No.	OHAM PART No.	NOTES
SP1	4"	PM	3.8Ω	8K-0023	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	MUNTZ PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	RF Choke	0Ω						
L3	RF, Mixer Grid & Osc. Coils	0Ω						
L4	RF Coil	0Ω						
L5	Conv. Plate	0Ω						
L6	1st. Video IF	.8Ω		LC-0080	19-1000		4602	1 Microhenry (GRC part #CLA)
L7	2nd Video IF	.44Ω		LC-0079				68 Microhenry (GRC part #CLA)
L8	3rd. Video IF	.8Ω		LC-0080	19-1000		4602	1 Microhenry (GRC part #CLA)
L9	3rd. Video IF	.7Ω		LC-0076	19-1001		4604	1.9 Microhenries (GRC part #CLA)
L10	RF Choke	5.5Ω		LC-0078	19-1004		4610	7.5 Microhenries (GRC part #CLA)
L11	4th. Video IF	.8Ω		LC-0080	19-1001		4602	1 Microhenry (GRC part #CLA)
L12	Series Peaking Coil	7Ω		LC-0077	19-3125		6153	120 Microhenries
L13	Shunt Peaking Coil	42Ω		LC-0074	19-3250 *	TV-185 *	6181 *	280 Microhenries (wound on 18KΩ resistor)
L14A	4.5MC Trap	1.7Ω						
B	1st. Video IF	2.9Ω		LO-0058				
L15	Series Peaking Coil	42Ω		LC-0074	19-3250 *	TV-185 *	6181 *	280 Microhenries (wound on 18KΩ resistor)
L16	Shunt Peaking Coil	15.3Ω		LC-0075	19-3500	TV-186	6174	450 Microhenries
L17	2nd. Sound IF	.3Ω	.3Ω	LI-0057	16-3445 ■	TV-L3	6203	Includes cap.
L18	Quadrature Coil	5Ω		LI-0058	20-1005	TV-151	1469	
L19	Horiz. Osc.	80Ω		LO-0059	20-1402 ▲	TV-L52 ▲	6183 ▲	Tapped ⅓ 58Ω-Horiz. Phase winding -64Ω

* Parallel with 18KΩ resistor.
■ Drill mounting holes.
▲ Reverse coil mounting in can.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT (000 ℄s)	MUNTZ PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L20	.190ADC	22Ω	.75 Hy.	LC-0081	C-2328 ①			C5041 ①	

① Drill one new mounting hole.

MODELS 421T1, 421T1N, 421T2 (Ch. 47A4)

MUNTZ

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MUNTZ PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.250ADC	PR-0231	1090A	RS300	6S300	6Q4	300	

MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M2	Tuner	PR-0228	VHF
M3	Trap	31K-919	VHF Ant. Input Filter
M4	Centering Device		Part of Yoke Cover (T4)
M5	Ion Trap	PR-0229	
A6	Trimmer Capacitor	CT-0021	Video IF input trimmer (8-70MMF)
B3	Trimmer Capacitor	CT-0021	Horiz. Drive (8-70MMF)
	Cabinet	CW-0055	Metal - Pebble tan
	Cabinet	CW-0055-2	Metal - Mahogany
	Cabinet	CW-0055-4	Metal - Oak
	Knob	KB-0055	Fine tuning - tan
	Knob	KB-0055-2	Fine tuning - mahogany
	Knob	KB-0056	Channel selector - tan
	Knob	KB-0056-2	Channel Selector - mahogany
	Knob	KB-0057	Contrast - tan
	Knob	KB-0057-2	Contrast - Mahogany
	Knob	KB-0058	On-off-volume - tan
	Knob	KB-0058-2	On-off-volume - mahogany
	Safety Glass	WG-0019	Clear
	Safety Glass	WG-0020	Black tinted
	Mask	ES-0055	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

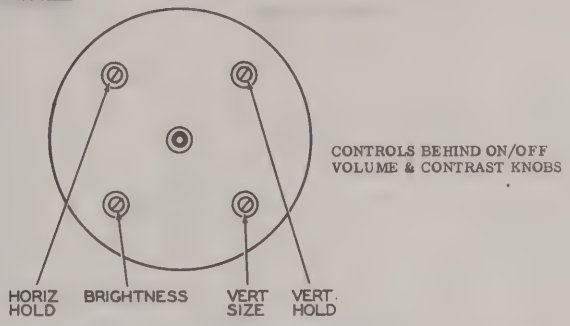
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



To adjust the vertical and horizontal hold, brightness and vertical size controls, the on/off volume and contrast control knobs must be removed. The rear cover must be removed to adjust the vertical linearity, slot is accessible for buzz control.

HORIZONTAL OSICLLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to the set. Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF buzz adjust the buzz control (R7) for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

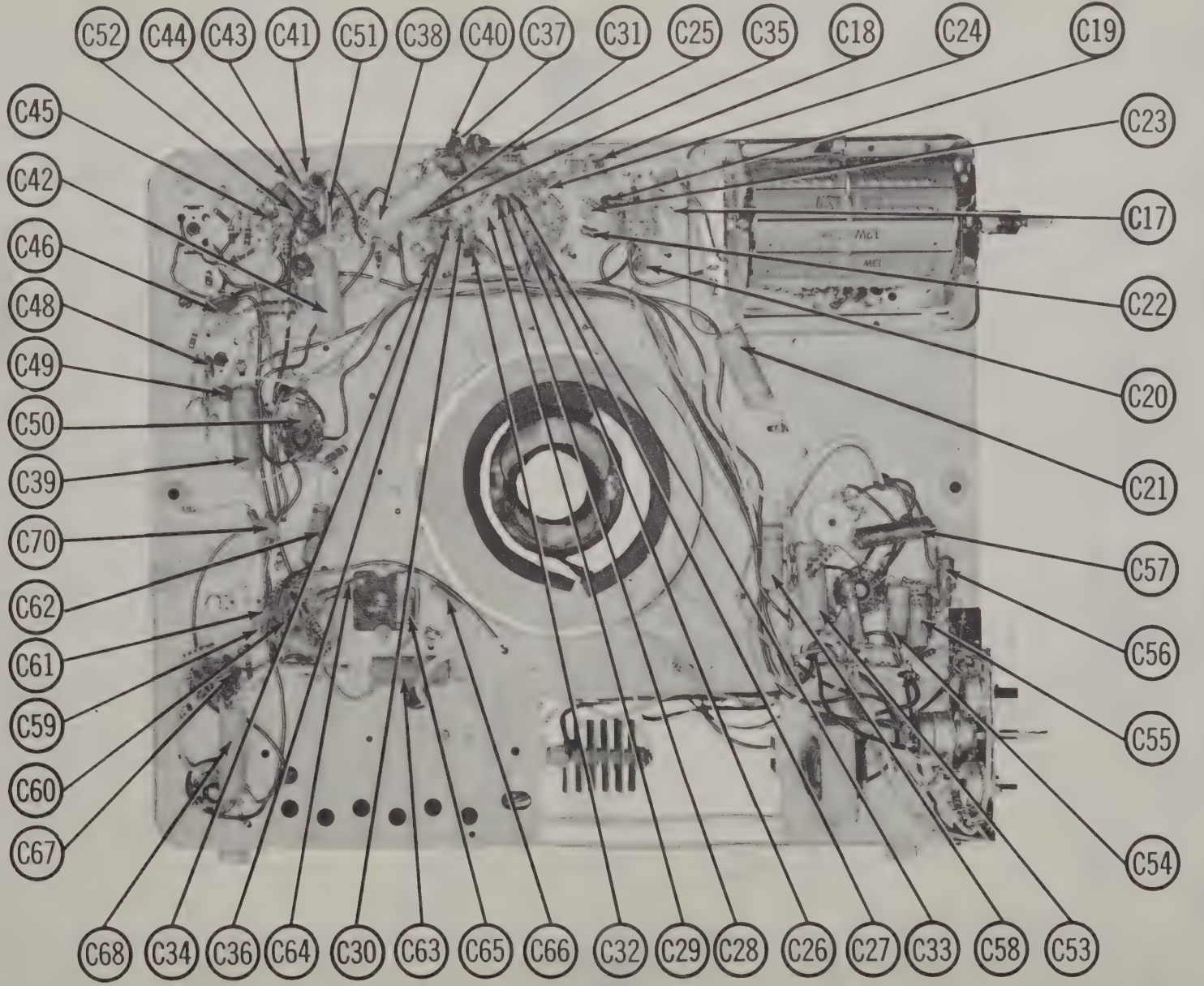
1. Remove 4 push-on type control knobs from side of cabinet.
2. Remove 5 metal screws. Remove rear cover.
3. Remove 3 metal screws from each side of chassis mounting board.
4. Remove 1 wood screw from front of chassis mounting board.
5. Loosen 2 speaker bracket screws and slide speaker toward center of chassis.
6. Slide cabinet forward.

CAUTION: Safety glass is not secure when cabinet is removed from mounting board.

PICTURE TUBE REMOVAL

Remove picture tube socket, Ion trap and HV lead.

Remove 2 picture tube front mounting band nuts. Remove picture tube.



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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MODEL 21204

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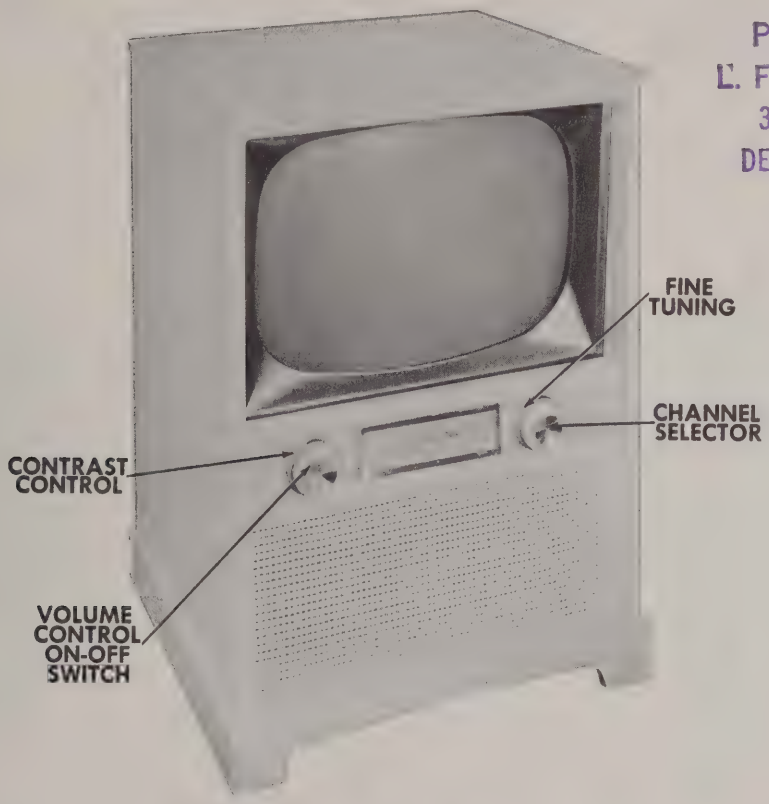

PACKARD-BELL MODEL 21204

TRADE NAME	Packard-Bell	MODELS	CHASSIS
		17101, -U, 17104, -U, 21102, -U, 21201, -U, 21204, -U	T-10

MANUFACTURER	Packard-Bell Co., Service Div., 11th. & Hope Streets, Los Angeles 15, California
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.38 Amp. @ 117Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instruction 10
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 14, 15, 16
Photographs
Cabinet- Rear View 11
Capacitor Identification 4, 9
Chassis-Top View 3
RF Tuner 7
Resistor Identification 12, 17
Photographs (Cont)
Trans., Inductor & Alignment Identification ... 13
Resistance Measurements 8
Servicing in the Field 18
Schematic (Alternate Tuner) 19
Schematic (TV) 2
Trouble Shooting Aids 6, 7
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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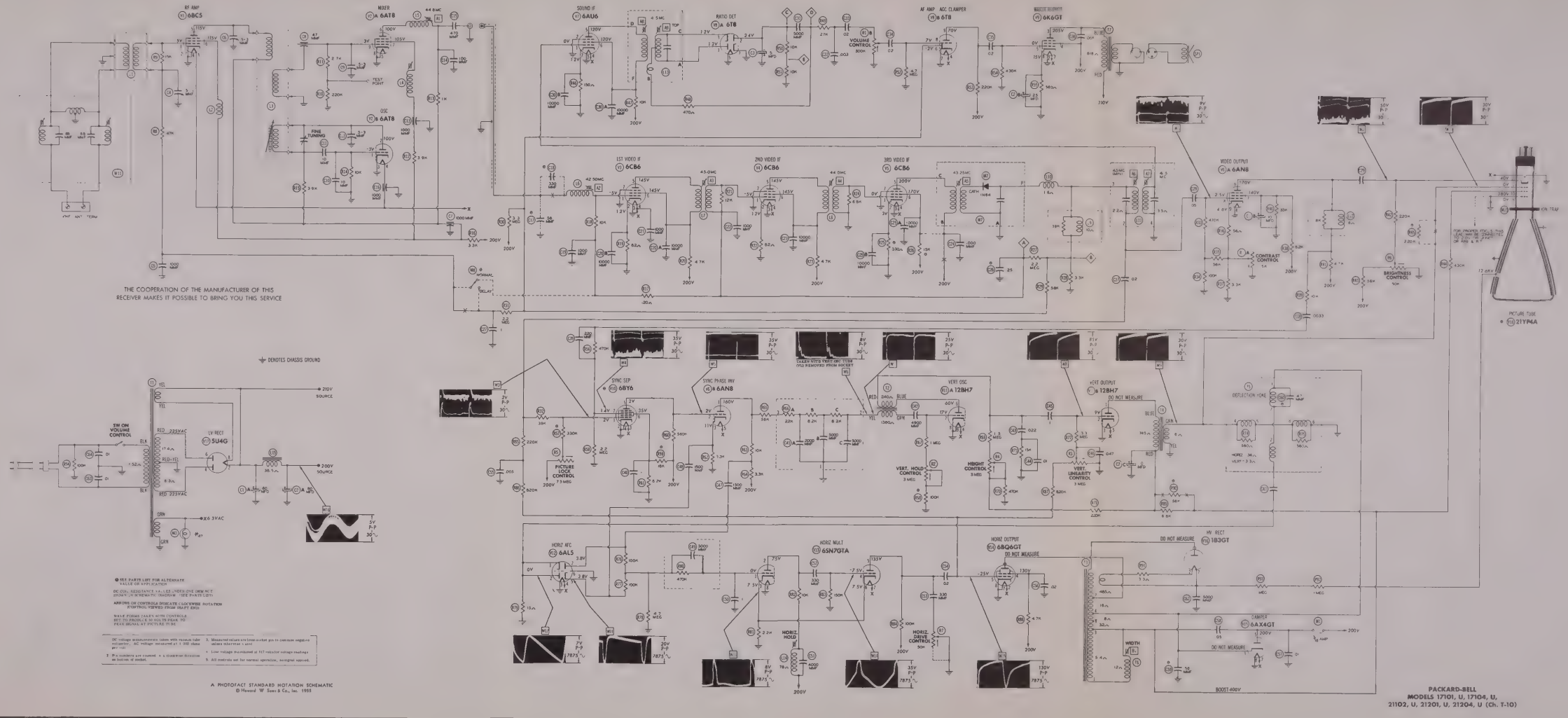
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DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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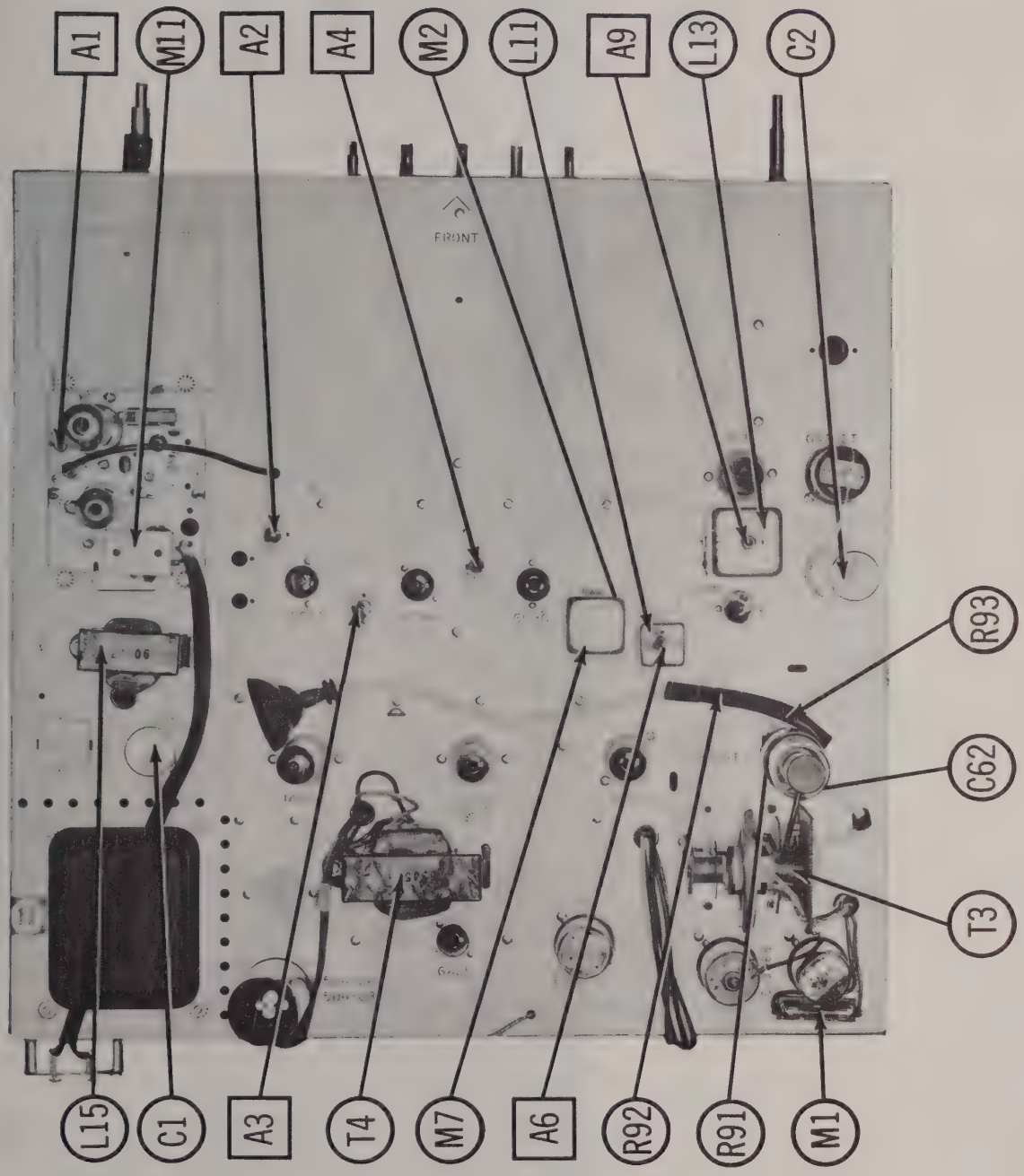

CHASSIS TOP VIEW

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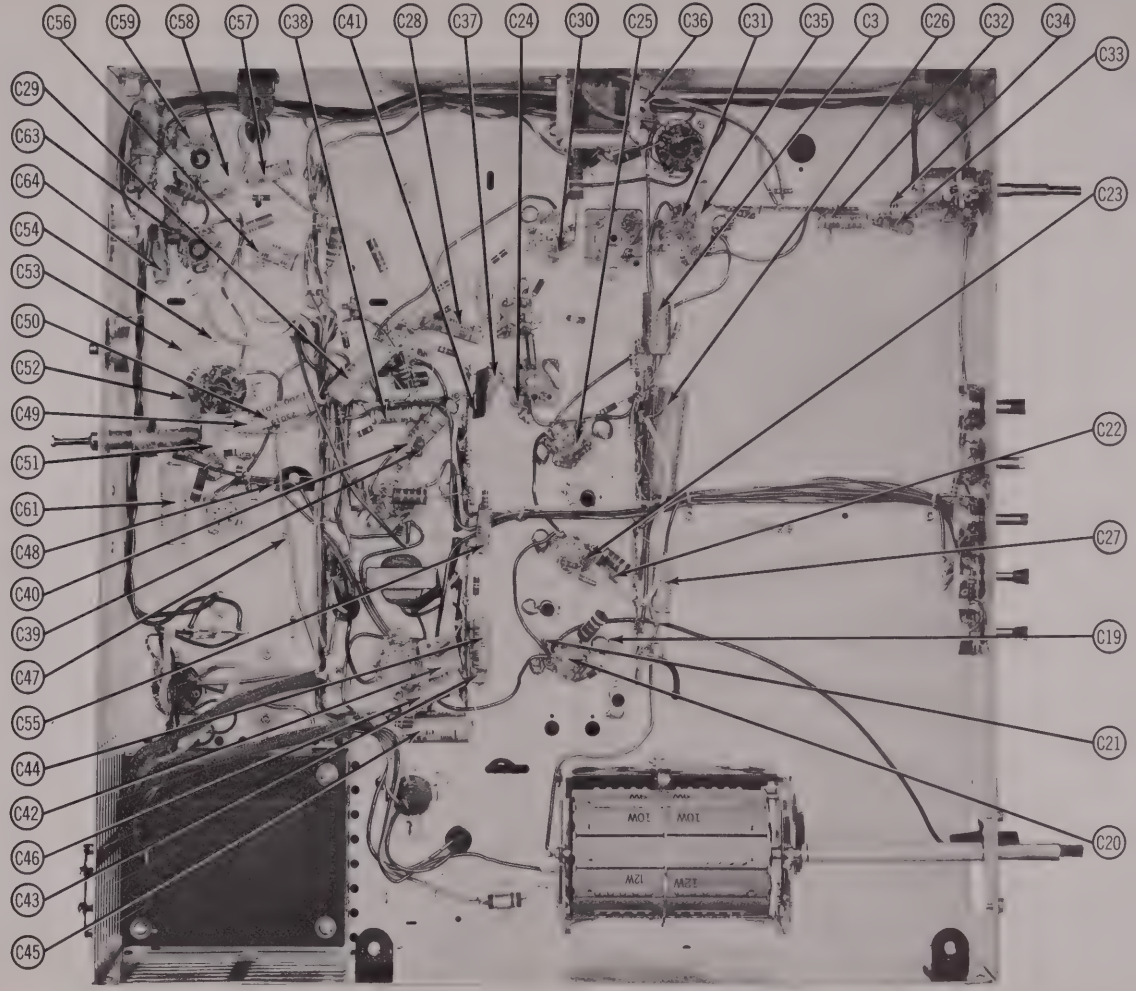

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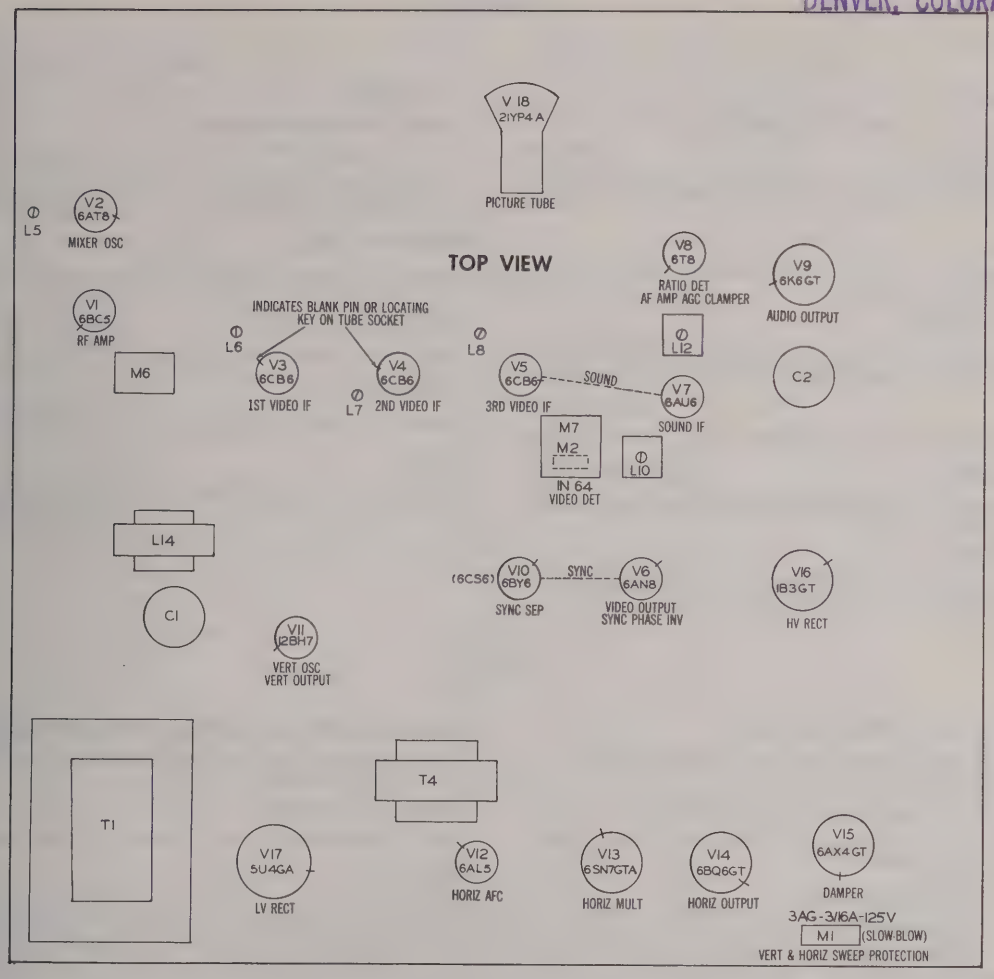
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V17**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V18**
Has pic, no sound - **V7, V8, V9**
Overloaded picture - **V8**

SYNC FAILURE
No vert. sync - **V6, V11**
No horiz. sync - **V6, V12, V13**
No vert. or horiz. sync - **V6, V10**

SWEEP FAILURE
No raster, has sound - **V13, V14, V15, V16, V18, Fuse (M1)**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V13, V14, V15**
Narrow picture - **V13, V14, V15, V16, V17**
Vert. off freq. - **V6, V11**
Horiz. off freq. - **V6, V12, V13**

PACKARD-BELL
MODELS 17101, U, 17104, U,
21102, U, 21201, U, 21204, U (Ch. T-10)

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V14, V15 and V17. Check adjustments R7 and B1. Check C54, C53, R88 and other associated components.

DRIVE LINES

Check by substitution V14 and V15. Check adjustment R7. Check R88, C54, C56 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V14 and V15. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V13, V14 and V15. Check C50 for open. Check L13, C51 and other associated components.

XMAS TREE EFFECT

Check by substitution V13, V14 and V15. Check T3 and T5 for internal arcing. Check L13, C51, C52, C49, C54, R81 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V11. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T4, T5B, C2C, R89, R90 and other associated components.	Check T2, R71, R69, R4, C45, C43 and other associated components.

INSUFFICIENT SWEEP

Substitute V11. Check height and vertical linearity controls for proper operation. Check T4, R71, R69 and other associated components.

COMPRESSED AT BOTTOM

Substitute V11. Check R71, R69, R4, T2 and other associated components.

COMPRESSED AT TOP

Substitute V11. Check R87, R72, R3, C45 and other associated components.

FOLDS

Substitute V11. Check C45, C43, C44, R73, R87 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6 and V10. Check C38, C39, R60, R59, R64, R63 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V11. Check vertical integrator network. Check T2, C42, R67, R68, R2 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check C47, C48, C51, L13, R76, R77 and other associated components.

HORIZONTAL BENDING

Check by substitution V6, V10, V12 and V13. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C28, C29, R38, R41, L12 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A6. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check C28, C29, R36, L9, L10 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check L10, L11, C28, C29 and other associated components. Check video crystal detector network.

SMEAR

Substitute V6. Check L9, L10, L11, C28, C29 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stages V8 and V9 using audio signal generator. Apply audio signal across R18.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C31, C33, C34, C35, C36, R53, R55, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A9 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V17. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Substitute V17. Check B+ filter and decoupling network.

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V13, V14, V15 and V16. Check M1 fuse. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check T3, T5A, T6, C57, C59, C58, C56, R88 and other associated components.	Check L13, C51, C52, C54, R84, R82, R81 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V14, V15 and V17. Check adjustments B1 and R7. Check R88, C54, C53 and other associated components.

BLOOMING

Check by substitution V14, V15, V16 and V17. Check R92, R93, R88, C54 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

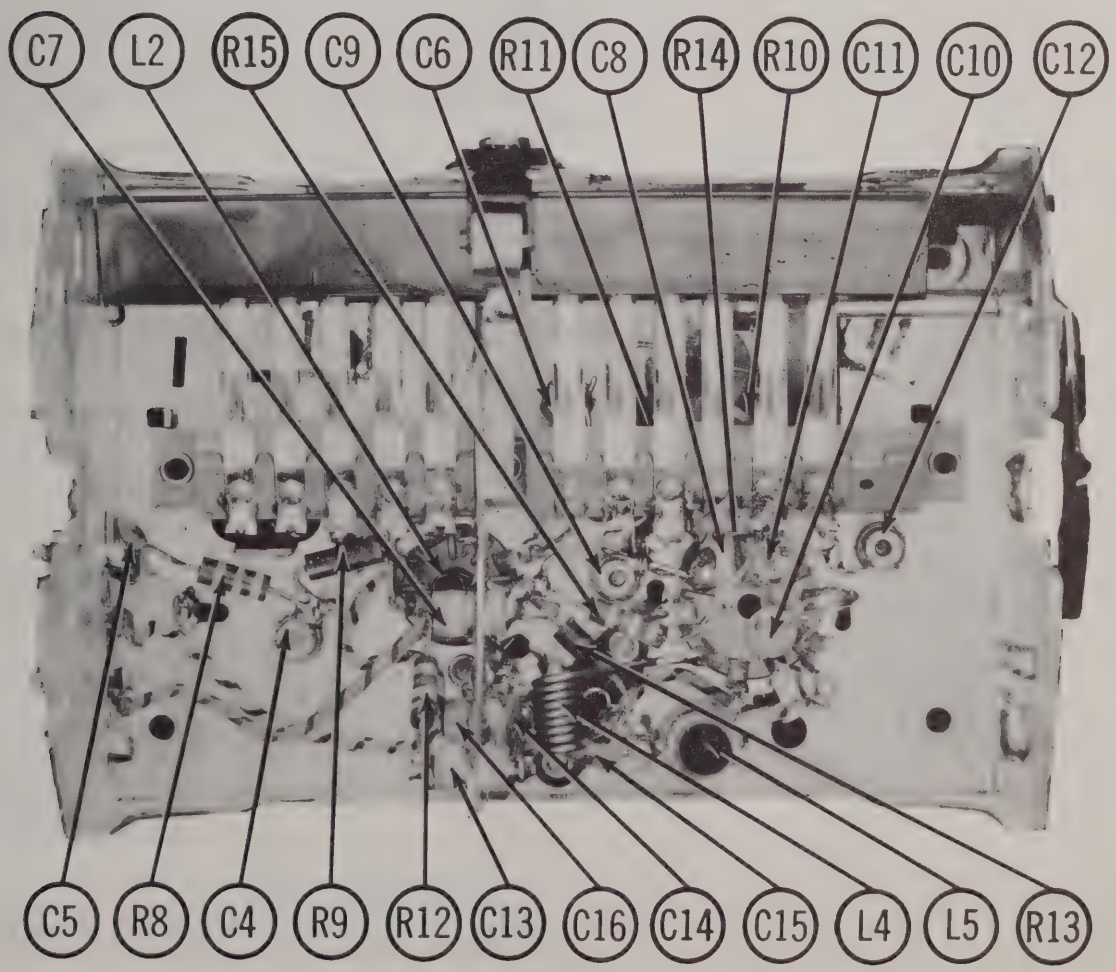
KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

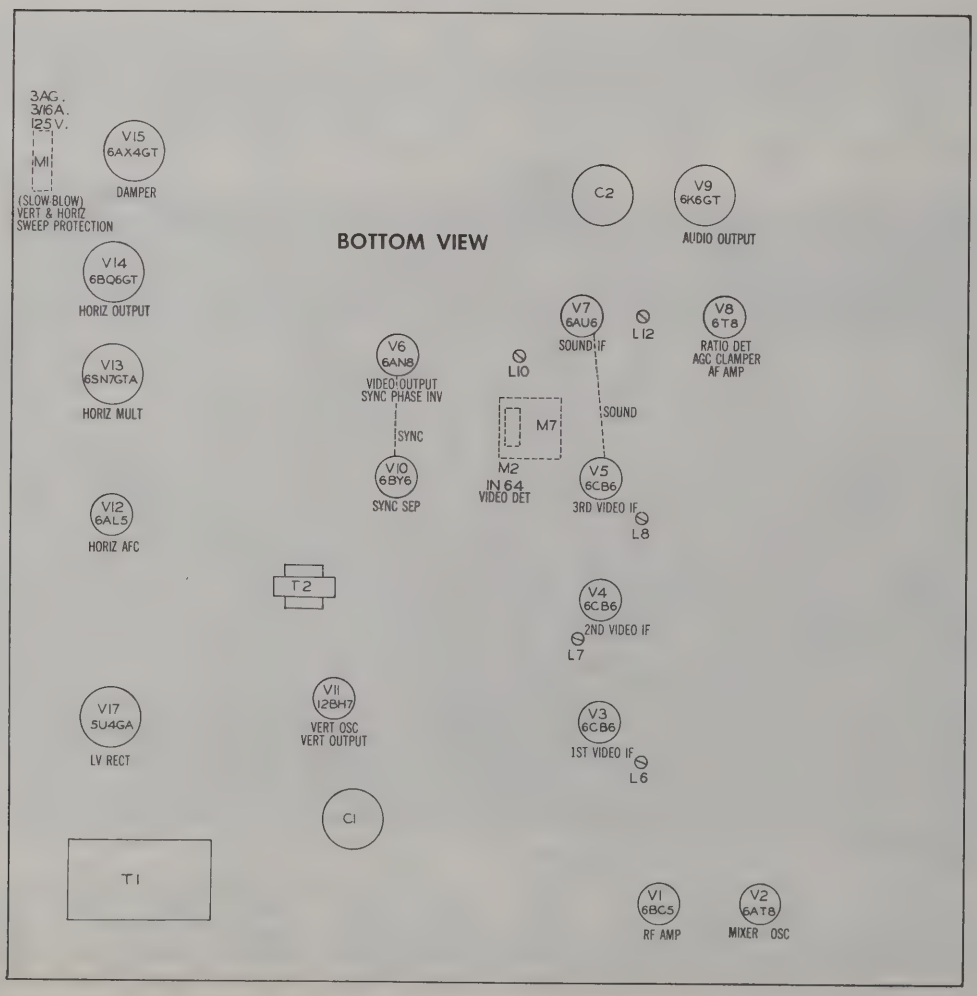


RF TUNER BOTTOM VIEW

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.2Meg	0Ω	.1Ω	0Ω	†3.3KΩ	†3.3KΩ	0Ω		
V 2	6AT8	10KΩ	†7.2KΩ	0Ω	.1Ω	0Ω	†4.3KΩ	†7.2KΩ	0Ω	223KΩ
V 3	6CB6	2.2Meg	82Ω	0Ω	.1Ω	†4.7KΩ	†4.7KΩ	0Ω		
V 4	6CB6	2.2Meg	82Ω	0Ω	.1Ω	†4.7KΩ	†4.7KΩ	0Ω		
V 5	6CB6	.1Ω	330Ω	0Ω	.1Ω	†40Ω	†15KΩ	0Ω		
V 6	6AN8	†10.3KΩ	†560KΩ	3.3KΩ	0Ω	.1Ω	†4.7KΩ	†6.5KΩ	470KΩ	500Ω
V 7	6AU6	3.5Ω	0Ω	0Ω	.1Ω	†10KΩ	†10KΩ	150Ω		
V 8	6T8	INF	20KΩ	INF	.1Ω	0Ω	60KΩ	0Ω	4.7Meg	†220KΩ
V 9	6K6GT	NC	0Ω	†620Ω	†40Ω	430KΩ	TP	.1Ω	560Ω	
V 10	6BY6	420KΩ	0Ω	.1Ω	0Ω	†560KΩ	†10KΩ	2.2Meg		
V 11	12BH7	▲7KΩ	4Meg	0Ω	.1Ω	.1Ω	▲2.7Meg	2.5Meg	0Ω	0Ω
V 12	6AL5	15Ω	15Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 13	6SN7GTA	5Meg	†10KΩ	2.2KΩ	150KΩ	†100KΩ	2.2KΩ	.1Ω	0Ω	
V 14	6BQ6GT	NC	.1Ω	TP	†4.7KΩ	1Meg	TP	0Ω	0Ω	Top Cap ▲16Ω
V 15	6AX4GT	NC	NC	230KΩ	NC	†40Ω	TP	.1Ω	0Ω	
V 16	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			Top Cap ▲500Ω
V 17	5U4GA	NC	12KΩ	NC	16Ω	NC	17Ω	NC	12KΩ	
V 18	21YP4A	0Ω	.6Ω	Pin 6 0Ω	Pin 10 ▲430KΩ	Pin 11 †200KΩ	Pin 12 .1Ω			

ALL MEASUREMENTS TAKEN WITH AGC SWITCH IN "NORMAL" POSITION.
† MEASURED FROM PIN 2 OF V17.
▲ MEASURED FROM PIN 3 OF V15.
NC - NO CONNECTION
TP - TIE POINT



TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V13) from its socket to disable the high voltage. Allow a 10 minute warm-up period for receiver and test equipment.

VIDEO IF ALIGNMENT

Do not connect a negative voltage to the AGC line.
Set generator output at maximum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	.001MFD	High side to ungrounded tube shield floating over mixer tube 6AT8 (V2A). Low side to chassis.	44.8MC	Any non-interfering channel.	DC probe to point Ⓐ. Common to chassis.	A1	Adjust for maximum output.
2	"	"	42.50MC	"	"	A2	"
3	"	"	45.0MC	"	"	A3	"
4	"	"	44.0MC	"	"	A4	"
5	"	"	43.25MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 5MFD, 50 volt capacitor to the ungrounded side of C26.
Connect positive lead to chassis.
Couple a second signal generator to an ungrounded tube shield floating over converter tube (V2) to provide marker on response curve.
Adjust signal generator output to develop approximately 4 volts of AGC.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	41.25MC 42.25MC 45.0MC 45.75MC	3	Vert. amp. thru 22KΩ to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 1. Adjust A2 for the overall bandwidth. Adjust A1 to place the 45.75MC at 50% on response curve. Adjust A3 for the position of the 45.0MC marker on response curve. Adjust A4 to place 41.25MC marker in position and to correct bottom portion of response curve. A5 controls position of curve on low frequency side. Note position of 45.0MC marker on response curve. It should not exceed this position.

4.5MC TRAP ALIGNMENT

If 4.5MC signal generator of crystal accuracy capable of at least one volt output is not available tune in a TV station and adjust A6 for MINIMUM 4.5MC beat interference in the picture.
Adjust contrast control fully clockwise. Remove the 3rd. video IF tube (V5) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7	.001MFD	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 2) to pin 11 (cathode) of picture tube. Common to chassis.	A6	Adjust for MINIMUM deflection with signal generator output at least 1 volt.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove the third video IF tube (V5) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8	.001MFD	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point Ⓒ. Common to chassis.	A7, A8	Adjust for maximum deflection.
9	"	"	"	"	DC probe to point Ⓓ. Common to point Ⓔ.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace V5 in its socket.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Remove the third video IF tube (V5) from its socket.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8	.001MFD	High side to point Ⓑ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point Ⓒ. Low side to chassis.	A7, A8	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
9	"	"	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A9	Reconnect stabilizing capacitor (C3). Adjust so that 4.5MC occurs at center of response curve as in Fig. 4. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines. Replace V5 in its socket.

TUNER ALIGNMENT

The tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

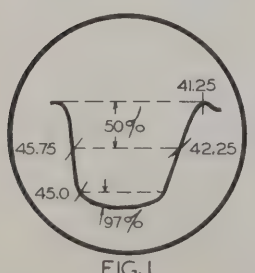


FIG. 1

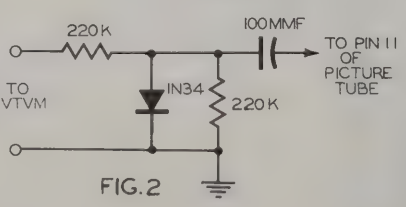


FIG. 2

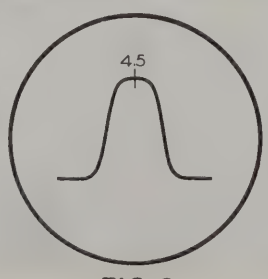


FIG. 3

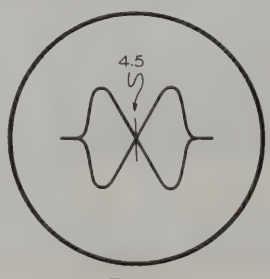


FIG. 4

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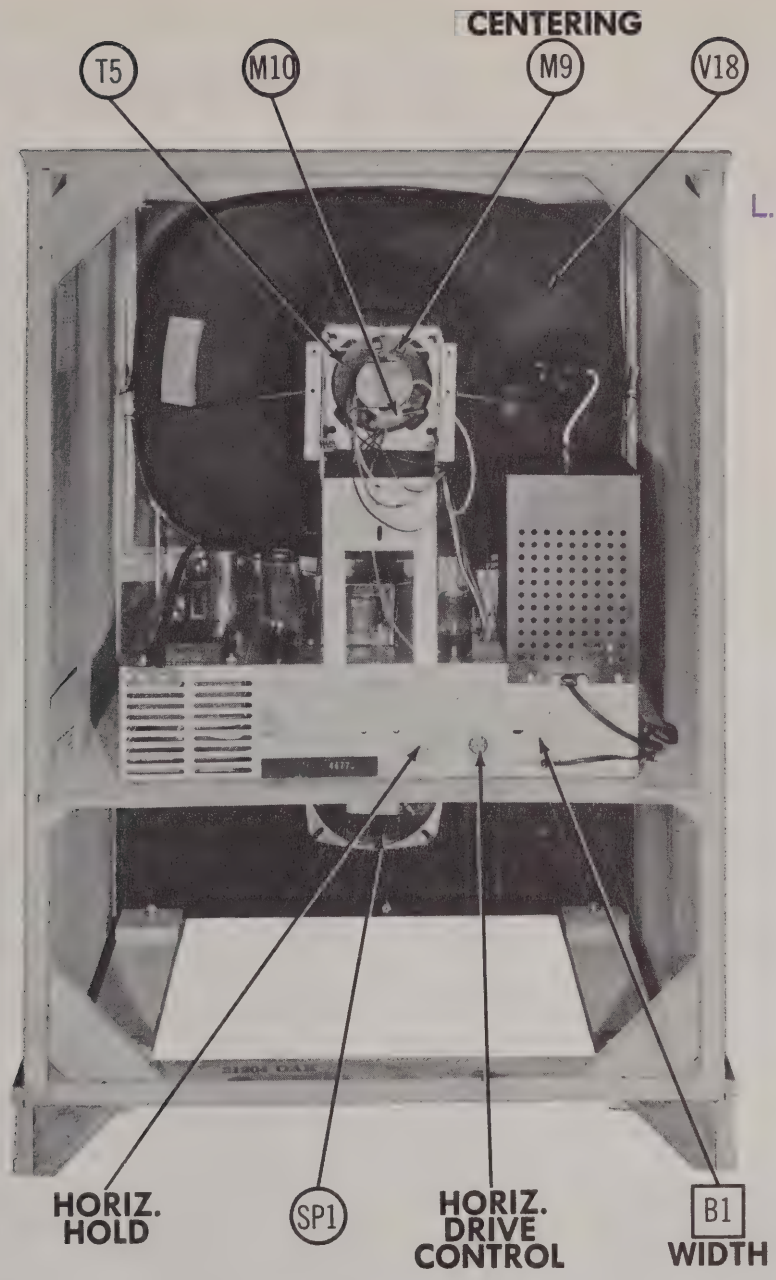


CABINET—REAR VIEW

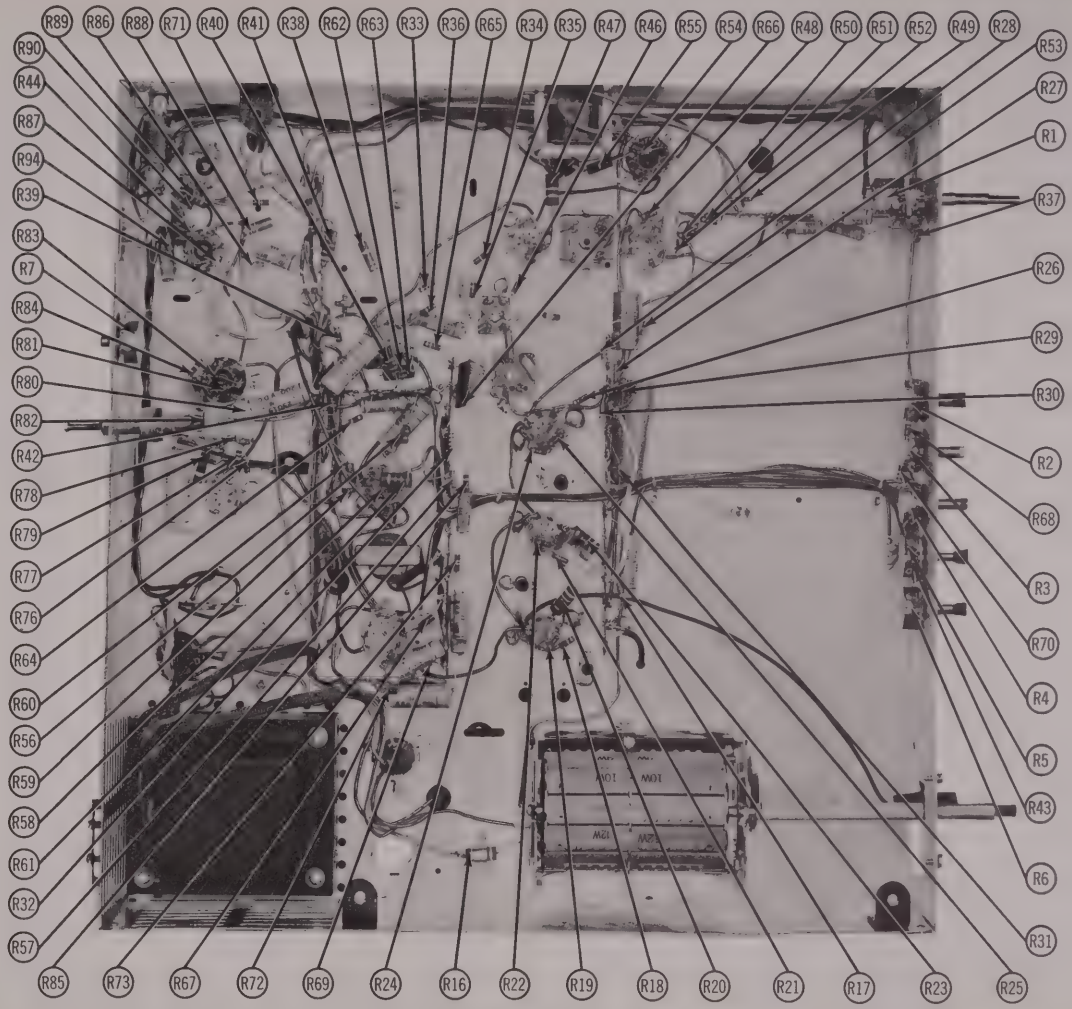
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn on the set and tune in a TV station, preferably a test pattern.

Adjust the horizontal oscillator slug (L13) (Labeled "Horizontal Hold" on rear panel) until the picture synchronizes horizontally. The correct setting of L13 slug is approximately half-way between the point where picture tears.

Adjust the horizontal drive control (R7) in a clockwise direction as far as possible without the presence of vertical white lines or compression near the center of the picture.

Adjust the width slug (B1) for a picture slightly wider than necessary to fill picture mask horizontally.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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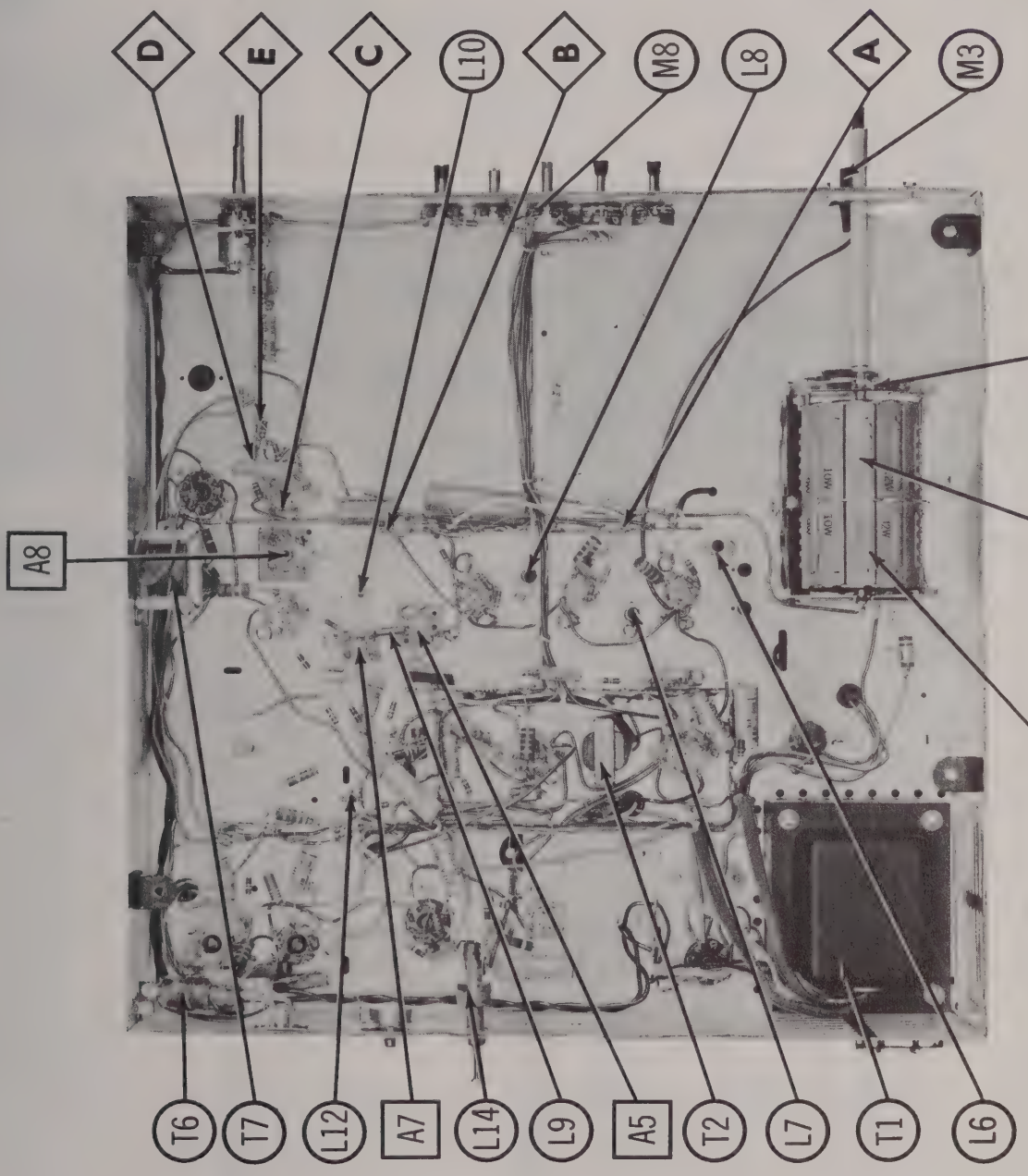
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PACKARD-BELL MODELS 17101, U, 17104, U, 21102, U, 21201, U, 21204, U (Ch. T-10)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BC8	6BC5	7BD	
V2	Osc.-Mixer	6AT8	6AT8	9DW	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output-Sync Phase Inv.	6AN8	6AN8	9DA	
V7	Sound IF Amp.	6AU8	6AU8	7BK	
V8	Ratio Det. - AF Amp. - AGC Clamper	6T8	6T8	9E	
V9	Audio Output	6K6GT	6K6GT	7S	
V10	Sync Separator	6BT8	6BT8	7CH	6CB6 used as alternate
V11	Vert. Osc. - Vert. Output	12BH7	12BH7	9A	
V12	Horiz. AFC	6AL5	6AL5	6BT	
V13	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V14	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V15	Damper	6AX4GT	6AX4GT	4CG	
V16	HV Rectifier	1B3GT	1B3GT	3C	
V17	LV Rectifier	5U4GA	5U4GA	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: Packard-Bell PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No	RETMA BASE TYPE	NOTES
V18	21YP4A ① 17HP4	21YP4A ① 21YP4 17HP4/17HP4	21YP4A ① 21YP4 17HP4 / 17HP4	21YP4A ① 21YP4 17HP4 / 17HP4	21YP4A ① 21YP4 17HP4 / 17HP4	12L 12L 12L	① Aluminized
		17BP4B ①				12L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: Packard-Bell PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	NOTES
C1A	±40	300	34084			FP333.5	TM-3024		
B	±10	300						(S-180 (MT-2510	
C2A	±80	300	24083				TM-3124		
B	25	25							
C	±10	350							
C3	8	50				TC30	TD-5-50	MMT-0805	
C4	5-11								
C5	1000			DD-102	801-001	DC-521			
C6	.5-3			829-3	3115-01-GR5	CT65A			
C7	1000								
C8	47								
C9	.5-3			829-3	3115-01-GR5	CT65A			
C10	10								
C11	10								
C12	.5-3			829-3	3115-01-GR5	CT65A			
C13	1000								
C14	100								
C15	470			DD-471	831-471	UC-5347			
C16	1000								
C17	56								Note 1
C18	330			D6-331	GP5K-331	UC-5333			Note 1
C19	1000			DD-102	801-001	DC-521		K-1210	
C20A	10000			DD3-103	811-01	DC-511			
B	10000				811-01	DC-511			
C21	1000			DD-102	801-001	DC-521		K-1210	
C22	1000			DD-102	801-001	DC-521		K-1210	
C23	10000			DD-103	811-01	DC-511			
C24	1000			DD-102	801-001	DC-521		K-1210	
C25A	10000			DD3-103	811-01	DC-511			
B	10000				811-01	DC-511			
C26	.25	600				PT6025	IMPE-P25	3306025	Note 2
C27	.1	200		DF-104		PT401	IMP2-P1	330201	
C28	.05	300		DF-503		PT415	IMP2-S5	330215	
C29	.1	400		DF-104		PT401	IMP4-P1	330401	
C30A	10000			DD3-103	811-01	DC-511			
B	10000				811-01	DC-511			
C31	5000			DD-502	811-005	DC-525	IMP6-D5	C-1250	
C32	.003	300		D6-302	GP2-333-302	PT623	IMP6-D3	330623	
C33	.02	300		DF-203	817-02	PT412	IMP2-S2	330212	
C34	.03	300		DF-303	817-03	PT413	IMP2-S3	330213	
C35	.02	600		DF-203	817-02	PT623	IMP6-S2	330612	
C36	.005	600		D6-502	GP2-333-502	PT625	IMP6-D5	330625	
C37	.02	400		DF-203	817-02	PT412	IMP4-S2	330412	
C38	.0033	400		D6-332	GP2-333-332	PT6233	IMP6-D33	3306233	
C39	220			D6-221	GP2K-331	DC-5323		K-1323	
C40	.1	200		DF-104		PT401	IMP2-P1	330201	
C41A	3000					DC-522	IMP6-D3	C-1230	
B	5000		●	●PC-100	●1405-01	DC-525	IMP6-D5	C-1250	
C	5000					DC-525	IMP6-D5	C-1250	
C42	4900	500				MCB465		CR-1249	
C43	.022	600		DF-203	817-03	PT6123	IMP6-S23	3306123	
C44	.01	600		D6-103	GP2-333-103	PT631	IMP6-S1	330631	
C45	.1	400		DF-104		PT401	IMP4-P1	330401	
C46	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C47	1500			DD-153	801-0015	DC-5315	IMP6-D15	C-1315	
C48	1500			DD-152	801-0015	DC-5315	IMP6-D15	C-1215	
C49	5000		†	DD-502	811-005	DC-525	IMP6-D5	C-1250	
C50	.1	200		DF-104		PT401	IMP2-P1	330201	
C51	4000	500				MCB463		CR-1240	
C52	330	500						KR-1333	
C53	330								

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: Packard-Bell PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	NOTES
C54	.02	600		DF-203	817-02	PT623	IMP6-S2	330612	
C55	.005	600		DF-503	GP2-333-502	PT625	IMP6-D5	330525	
C56	.02	400		DF-203	817-02	PT412	IMP4-S2	330412	
C57	.01	600		D6-103	GP2 333-103	PT631	IMP6-S1	330631	
C58	.05	600		DF-503		PT615	IMP6-S5	[redacted]	
C59	56	4000		DD60-560					Note 3
C60	47			DD30-470	3KV-470				Note 4
C61	.1	600		DF-104		PT601	IMP6-P1	330601	
C62	500	20000		TV3-502	[redacted]	HV20035A			
C63	.01	1250VAC							
C64	.01	1250VAC							

Note 1. Use in versions with tuner #10535 only.
Note 2. Some versions use .05MFD in this application.
Note 3. Some versions use 120MMF in this application.
Note 4. Some versions use 56MMF in this application.
● Items C41A, C41B, C41C, R65A, R65B, R65C are combined in one unit.
† Items C49 and R50 are combined in one unit.

CONTROLS

ITEM No	RATING: RESIST ANCE	WATTS	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω	½	35835A	*QJ-35		F1-41	UF53H	Contrast - Panel
B	500KΩ	½				R3-41	UR55A	Volume - Semr
C	Switch					KB-1	UB-56	Attach to R1B
R2A	3Meg	½	25854	Q1J-160	A47-3Meg-S	AB-84	U-59	Vertical Hold
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R2A
R3A	3Meg	½	25854	Q1J-160	A47-3Meg-S	AB-84	U-59	Vertical Linearity
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R3A
R4A	3Meg	½	25854	Q1J-160	A47-3Meg-S	AB-84	U-59	Height
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R4A
R5A	7.5Meg	½	25874	Q1J-163	A47-7.5Meg-S	AB-89	U-62	Picture Lock
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R5A
R6A	50KΩ	½	25858	Q1J-123	A47-50K-S	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R6A
R7A	500Ω	½	25873	Q1J-123	A47-50K-S	AB-31	U-35	Horizontal Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT: KIT K-3, BASE ELEMENTS & SHAFTS: B17-124 & P1-113 (PANEL)
B13-133 & R2-204 (REAR)
76-1 SWITCH

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R8	47KΩ	½		BTS-47K	
R9	15KΩ	½		BTS-15K	
R10	220KΩ	½		BTS-220K	
R11	3700Ω	½		BTS-3700	
R12	3900Ω	½		BTS-3900	
R13	1000Ω	½		BTS-1000	
R14	10KΩ	½		BTS-10K	
R15	3900Ω	2		BTS-3900	
R16	3300Ω	2		BTS-3300	
R17	150Ω	½		BTS-150	
R18	10KΩ	½		BTS-10K	
R19	33Ω	½		BTS-33	
R20	4700Ω	2		BTS-4700	
R21	15KΩ	½		BTS-15K	
R22	82Ω	½		BTS-82	
R23	4700Ω	2		BTS-4700	
R24	6800Ω	1		BTS-6800	
R25	330Ω	½		BTS-330	Note 5
R26	15KΩ	½		BTS-15K	Note 6
R27	2.2Meg	½		BTS-2.2Meg	
R28	3300Ω	½		BTS-3300	
R29	56KΩ	½		BTS-56K	
R30	3.3Meg	½		BTS-3.3Meg	
R31	2.2Meg	½		BTS-2.2Meg	
R32	39KΩ	½		BTS-39K	
R33	470KΩ	½		BTS-470K	
R34	100KΩ	½		BTS-100K	
R35	56KΩ	½		BTS-56K	
R36	56Ω	½		BTS-56	
R37	3300Ω	8		BTS-3300	
R38	8200Ω	1		BTA-8200	
R39	10KΩ	½		BTS-10K	
R40	33KΩ	1		BTA-33K	
R41	4700Ω	2		BTS-4700	
R42	220KΩ	½		BTS-220K	
R43	56KΩ	½		BTS-56K	
R44	470KΩ	½		BTS-470K	
R45	220KΩ	½		BTS-220K	Note 4
R46	150Ω	½		BTS-150	
R47	10KΩ	2		BTS-10K	
R48	470Ω	½		BTS-470	
R49	27KΩ	½		BTS-27K	
R50	10KΩ	½		BTS-10K	
R51	10KΩ	½		BTS-10K	
R52	4.7Meg	½		BTS-4.7Meg	
R53	330KΩ	½		BTS-330K	
R54	430KΩ	5%		BTS-430K	5%
R55	560Ω	1		BTA-560	
R56	470KΩ	½		BTS-470K	
R57	330KΩ	½		BTS-330K	Note 1
R58	3.3Meg	½		BTS-3.3Meg	
R59	18KΩ	2		BTS-18K	Note 2
R60	560KΩ	½		BTS-560K	
R61	8200Ω	2		BTS-8200	
R62	3300Ω	1		BTS-3300	
R63	10KΩ	2		BTS-10K	
R64	3300Ω	1		BTS-3300	
R65	56KΩ	½		BTS-56K	
R65A	22KΩ	½		BTS-22K	
B	8200Ω	½	●	BTS-8200	
C	8200Ω	½		BTS-8200	
R67	1Meg	½		BTS-1Meg	
R68	100KΩ	½		BTS-100K	Note 3
R69	1.5Meg	½		BTS-1.5Meg	
R70	470KΩ	½		BTS-470K	
R71	220KΩ	½		BTS-220K	
R72	3.3Meg	½		BTS-3.3Meg	
R73	15KΩ	½		BTS-15K	
R74	560Ω	½		BTS-560	
R75	560Ω	½		BTS-560	
R76	100KΩ	½		BTS-100K	
R77	100KΩ	½		BTS-100K	
R78	4.7Meg	½		BTS-4.7Meg	
R79	15Ω	½			
R80	470KΩ	½	†	BTS-470K	
R81	2200Ω	½		BTS-2200	
R82	10KΩ	½		BTS-10K	
R83	150KΩ	½		BTS-150K	
R84	100KΩ	½		BTS-100K	
R85	220KΩ	½		BTS-220K	
R86	820KΩ	½		BTS-820K	
R87	820KΩ	½		BTS-820K	
R88	4700Ω	1		BTA-4700	
R89	6800Ω	2		BTS-6800	
R90	56KΩ	½		BTS-56K	Note 4
R91	3.3Ω	1			
R92	1Meg	1		BTA-1Meg	
R93	1Meg	1		BTA-1Meg	
R94	100KΩ	1		BTA-100K	

* Items R66A, R66B, R66C, C41A, C41B and C41C are combined in one unit.
† Items R80 and C49 are combined in one unit.
Note 1: Some versions may use a 150KΩ resistor in this application.
Note 2: When replacing this resistor, use original clamp or double wattage.
Note 3: Some versions may use a 470KΩ resistor in this application.
Note 4: Not used in some versions.
Note 5: Early production models use a 120Ω ½ watt resistor, later production models use a 270Ω ½ watt resistor in this application.
Note 6: Early production models use a 330Ω 1 watt resistor in series with the screen and plate leads of V5 to B+.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Packard-Bell PART No	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No	Halldorson PART No	Thordarson PART No
T1	117VAC	460VCT	5VAC	89051			R-60BC			26R33 ④
	@1.38A	260ADC	@3A				[redacted]			
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC @1.9A									

① Use low tape on HV secondary, tape other leads, also tape extra 5V winding.
④ Parallel and phase 6.3V windings for Sec. #3.
⑤ Tape low ampere 6.3V winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: Packard-Bell PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc. Trans.	89046	B6702	A-3003	209T1 ①	V405	A-8125	24A89 ①	A-97X
T3	Horiz. Output Trans.	89440	F3411	HVO-9	230T1	X080	A-6137	FLY-24	D-22
T4	Vert. Output Trans.	89458	Z1805 ①	A-3080 ②		V306 ①	A-8140 ①	26S56 ②	A-103X
T5A	Yoke-Horiz. (69MH)	29556							
B	Vert. (3.3MH)								
T6	Width Coil (4-18MH)	29555	RF800 ③ ①	MWC-1 ③ ①	212R1 ①	20DR16 ①	WC-5 ①	WC-18	WC-12 ③ ①

① Drill new mounting hole(s).
② Use 50-1 turns ratio.
③ Connect to coded blue and red terminals.
④ Drill new mounting hole(s) or use original slider and core.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	7	9	9	9	9	7	9	9
	4	8 or 7	8 or 7	8 or 7	5	4	8 or ?	Jumper 7 & 8
	T (NC)	NC	NC	NC	NC	NC	NC	NC
	3	3	3	3	3	3	3	3
	1	1	1	1	1	1	1	1
Connect Width Coil Across →	3 & 1	3 & 1	3 & 1	3 & 1	3 & 1	3 & 1	3 & 1	3 & 1
Special Notes →		⑤	⑤	⑤	⑥		⑤	

① In case of insufficient width add capacitance across terminals " T" and "3". Values required may range from .001MFD ⑥ 600V to .005MFD ⑥ 600V.
④ Jumper terminals "7" and "8".

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Packard-Bell PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T7	5.8KΩ	3.3Ω	89427	A-3877	A-3920	S-2X	Z1000	24S51	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP	REPLACEMENT DATA: Packard-Bell PART No	JENSEN PART No	QUAM PART No	NOTES
SP1	6"	PM	3.3Ω	83305	ST-10s Mod V6-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: Packard-Bell PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	RF Choke	0Ω						
L3	RF, Mixer Grid & Osc. Coils	0Ω						
L4	RF Choke	0Ω						
L5	Conv. Plate	.1Ω						
L6	1st. Video IF	.1Ω		29559	20-1045 *	TV-121	6325	
L7	2nd. Video IF	.1Ω	.1Ω		17-4502 ▲	TV-120	6319	
L8	3rd. Video IF	.1Ω	.1Ω	29579	17-4500 ▲	TV-120	6319	
L9	Series Peaking Coil	1.6Ω			19-1005		4613	10 Microhenries
L10	Shunt Peaking Coil	10Ω			19-4180	TV-183	6179	170 Microhenries, wound on 39KΩ resistor
L11A	4.5MC Trap	2.3Ω						
B	Sound IF	3.5Ω		29563	17-1021 ▲	TV-106 ▲	1466 ▲	
L12	Shunt Peaking Coil	18Ω			19-3300 ▲	TV-190 ▲	4648 ▲	380 Microhenries, wound on 18KΩ resistor
L13	Ratio Det.	4Ω	.3OCT	29054	17-3492	TV-115 *	1490	Tertiary winding - 8Ω
L14	Horiz. Osc.	78Ω			19-1576	TV-163	6319	

* Use one winding only.
● Deluxe Trap winding.
▲ Drill one new mounting hole.
▲ Parallel with 18KΩ resistor.
* Use adapter plate.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Packard-Bell PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L15	.240ADC	38.5Ω	1 Hy.	27006	C-2326①	C-2996 ①	C-23X ①	C5037 ①	26C44 ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Packard-Bell PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	3/16A 125V			313.187 (3AG-S/B-3/16A)	357001	MDL 3/16	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Packard-Bell PART No.	SYLVANIA PART No.		
M2	1N64		1N60 or 1N132		Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M3	Dial Light		#47, Bayonet
M4	Tuner	70537	VHF- Models without "U" suffix
M5	Tuner	10535C	VHF-UHF Models with "U" suffix
M6	Ant. Crossover Network	10536	VHF-UHF Models with "U" suffix
M7	Video Det. Assy.	29580	Includes M2, 4th. Video IF & capacitor
M8	Switch		AGC (Slide type DPDT) Not used in some versions
M9	Centering Device		
M10	Ion Trap	28106A	
M11	Trap		VHF Ant. Input Filter
	Knob	52095	UHF tuning - "U" Models
	Knob	52096	VHF tuning - "U" Models
	Knob	52097	Fine tuning - "U" Models
	Knob	52098	On-off - volume-"U" Models

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet,above and slightly to the left of the channel selector shaft.

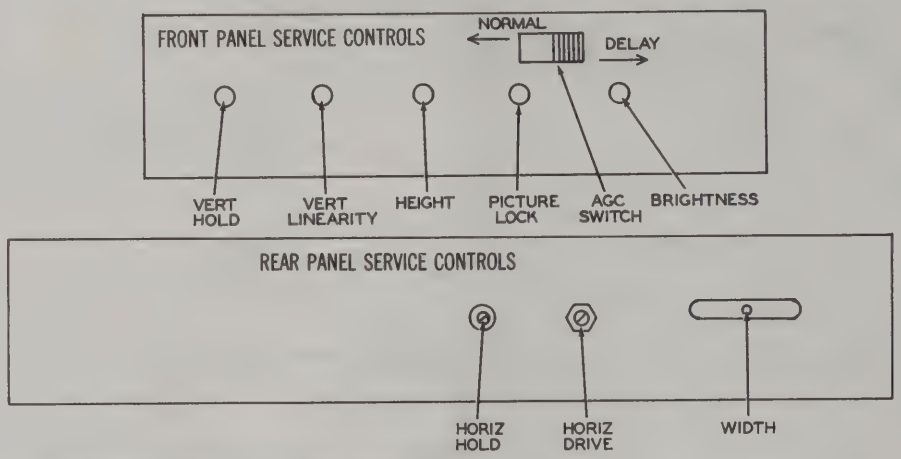
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 4 wood screws holding wood strip at the top of the safety glass. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - PICTURE LOCK ADJUSTMENT

The picture lock control should be adjusted at the location where the receiver is to be used.

Tune in a TV station locally.

Turn picture lock control clockwise until picture begins to distort. Turn control counter clockwise until sync remains stable. NOTE: If noise tends to distort sync, control should be set as far clockwise as possible without pulling picture.

HORIZONTAL OSCILLATOR FIEL D ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from rear panel of the chassis. Adjust the horizontal hold slug until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the radio detector secondary (L13) located on top of chassis.

FUSES

One fuse is used for horizontal sweep and vertical sweep protection. (For location see tube placement chart).

CENTERING

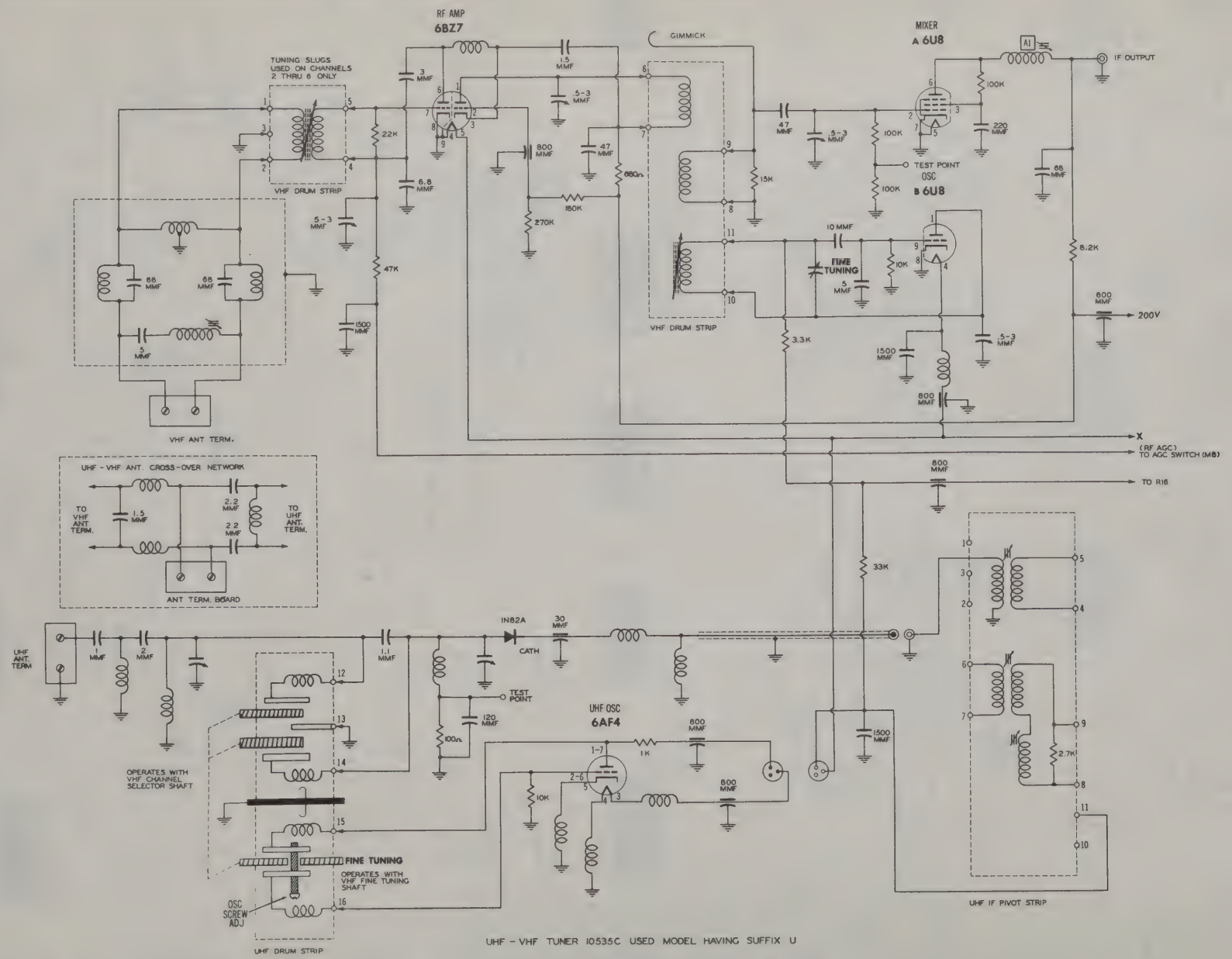
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push-on type control knobs from front panel of cabinet.
2. Remove 7 wood screws. Remove rear cover.
3. Remove speaker plug from rear panel of chassis.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove 4 wood screws. Remove speaker.

PICTURE TUBE REMOVAL

1. Disconnect picture tube socket and HV lead.
2. Remove Ion trap.
3. Loose 2 front tube mounting band nuts. Remove picture tube.



UHF - VHF TUNER 10535C USED MODEL HAVING SUFFIX U

ALTERNATE TUNER SCHEMATIC

RETMA MEMBER

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

STROMBERG-CARLSON
MODEL AU-58

STROMBERG-CARLSON
MODEL AU-58

TRADE NAME	Stromberg-Carlson Model AU-58
MANUFACTURER	Stromberg-Carlson Co., Sound Div., 1225 Clifford Ave., Rochester 21, N. Y.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (Seven)	Types (2) 6AU6 Preamp., 12AU7 AF Amp., 12AU7 AF Amp-Phase Inv., (2) 6L6GT Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .9 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODEL AU-58

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Stromberg-Carlson PART No.	STANDARD REPLACEMENT		
V1	Channel #1 Preamp.	6AU6	6AU6	7BK	
V2	Channel #2 Preamp.	6AU6	6AU6	7BK	
V3	AF Amp.	12AU7	12AU7	9A	
V4	AF Amp. - Phase Inverter	12AU7	12AU7	9A	
V5	Output	6L6GT	6L6GT	7S	
V6	Output	6L6GT	6L6GT	7S	
V7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

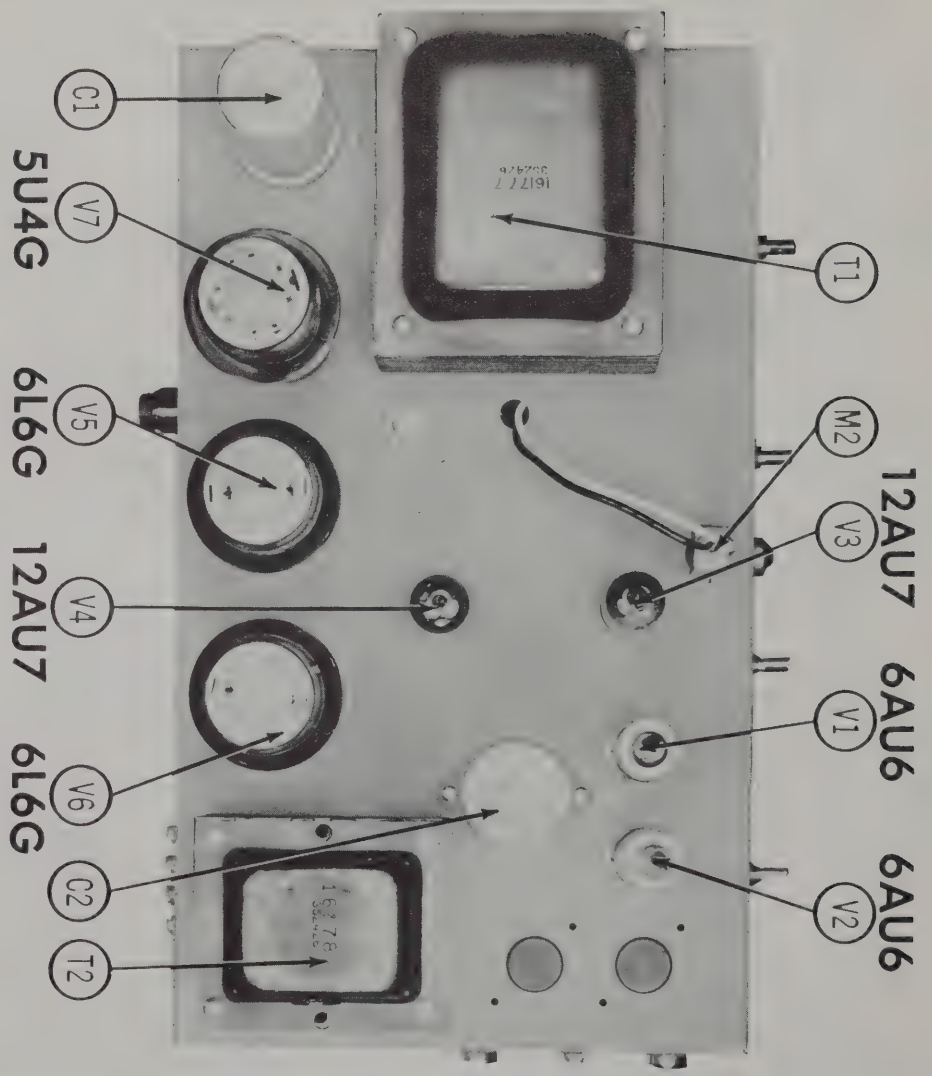
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT	Stromberg-Carlson PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲30	500				FP284	TM-D40-500	D-275	
B	■30	500				FP376. 9	TM-403020-450	Q-050	
C2A	■30	300				TC39	TD-50-50	FM-0550	
B	▲15	350							
C	▲40	450							
D	50	50							
C3	50	6				TC29	TD-50-6	MMT-650	
C4	50	6				TC29	TD-50-6	MMT-650	
C5	50	6				TC29	TD-50-6	MMT-650	
C6	.1	200		DF-104		PT401	IMP2-P1	330201	Note 1
C7	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C8	100			D6-101	GP1K-101	UC-531		K-1310	
C9	220			D6-221	GP2K-221	UC-5322		K-1322	
C10	.1	200		DF-104		PT401	IMP2-P1	330201	Note 1
C11	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C12	470			D6-471	GP2K-471	UC-5347		K-1347	
C13	.022	200		DF-203	817-02	PT4122	IMP4-S22	3304122	
C14	.1	400		DF-104		PT401	IMP4-P1	330401	
C15	470			D6-471	GP2K-471	UC-5347		K-1347	
C16	.22	400				PT4022	IMP4-P22	3304022	
C17	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C18	.047	400		DF-503		PT4147	IMP4-S47	3304147	
C19	.01	600		D6-103	GP2-333-103	PT611	IMP6-S1	330611	

① Some versions use .15MFD in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	46313	Q13-137	A47-1Meg-Z	B-70	U-53	Microphone Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	1Meg	½	46313	Q13-137	A47-1Meg-Z	B-70	U-53	Input Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3	5Meg	½	46314	Q17-141				Bass
R4A	50KΩ	½	145629	Q11-123	A47-50K-S	B-31-S	U-35	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R4A
R5A	100Ω	2		W-100	A43-100	VK-121	C100P	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Stromberg-Carlson PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R6	1Meg	½		BTS-1Meg	
R7	15KΩ	½		BTS-15K	
R8	1Meg	½		BTS-1Meg	
R9	2700Ω	½		BTS-2700	
R10	1.5Meg	½		BTS-1.5Meg	
R11	470KΩ	½		BTS-470K	
R12	1.5Meg	½		BTS-1.5Meg	
R13	47KΩ	½		BTS-47K	
R14	180KΩ	½		BTS-180K	
R15	150KΩ	½		BTS-150K	
R16	1Meg	½		BTS-1Meg	
R17	2700Ω	½		BTS-2700	
R18	1.5Meg	½		BTS-1.5Meg	
R19	100KΩ	½		BTS-100K	
R20	180KΩ	½		BTS-180K	
R21	47KΩ	½		BTS-47K	
R22	180KΩ	½		BTS-180K	
R23	2200Ω	½		BTS-2200	
R24	2.7Ω	1			

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Stromberg-Carlson PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R25	180KΩ	½		BTS-180K	
R26	150KΩ	½		BTS-150K	
R27	2200Ω	½		BTS-2200	
R28	47KΩ	½		BTS-47K	
R29	4700Ω	½		BTS-4700	
R30	150KΩ	½		BTS-150K	
R31	3900Ω	½		BTS-3900	
R32	150KΩ	½		BTS-150K	
R33	12KΩ	½		BTS-12K	
R34	150KΩ	½		BTS-150K	
R35	10KΩ	½		BTS-10K	
R36	150KΩ	½		BTS-150K	
R37	250Ω	10		1 3/4A-250	
R38	150KΩ	½		BTS-150K	
R39	39KΩ	½		BTS-39K	
R40	10KΩ	1		BTA-10K	
R41	5000Ω	10		1 3/4A-5000	
R42	100KΩ	2		BTB-100K	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	125V Tap @ 117V @ .9A	674VCT .112ADC	5VAC @ 3A	6.3VAC @ 1A SEC. 4 6.3VAC @ 2.1A	161777					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	6.2KΩ CT	70V* SEC. 2 4.64Ω RES	161782						

* Tapped @ 35V., 25V., 16Ω, 8Ω and 4Ω.

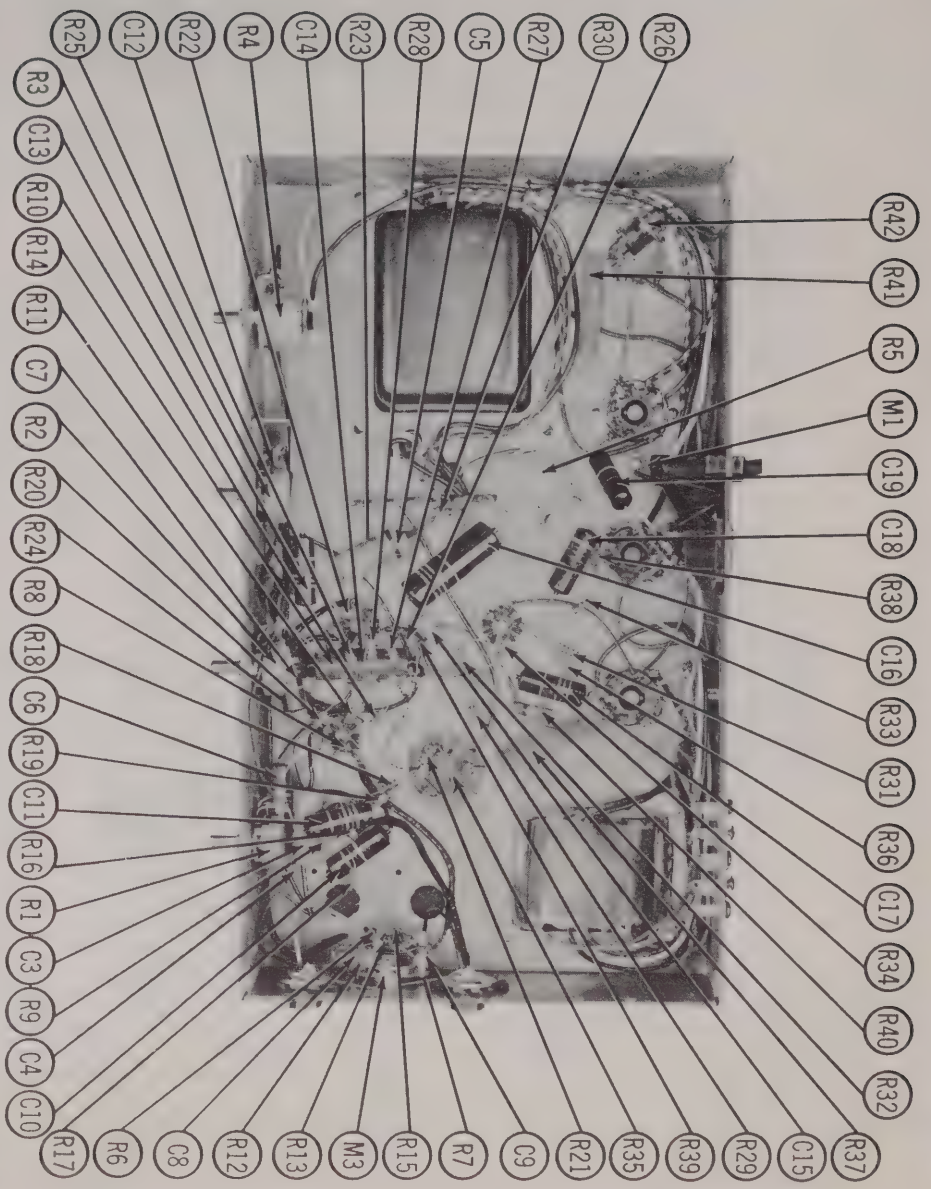
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Stromberg-Carlson PART No. FUSE	Stromberg-Carlson PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 250V			312003 (3AG-3A)	342001	AGC3	HKP

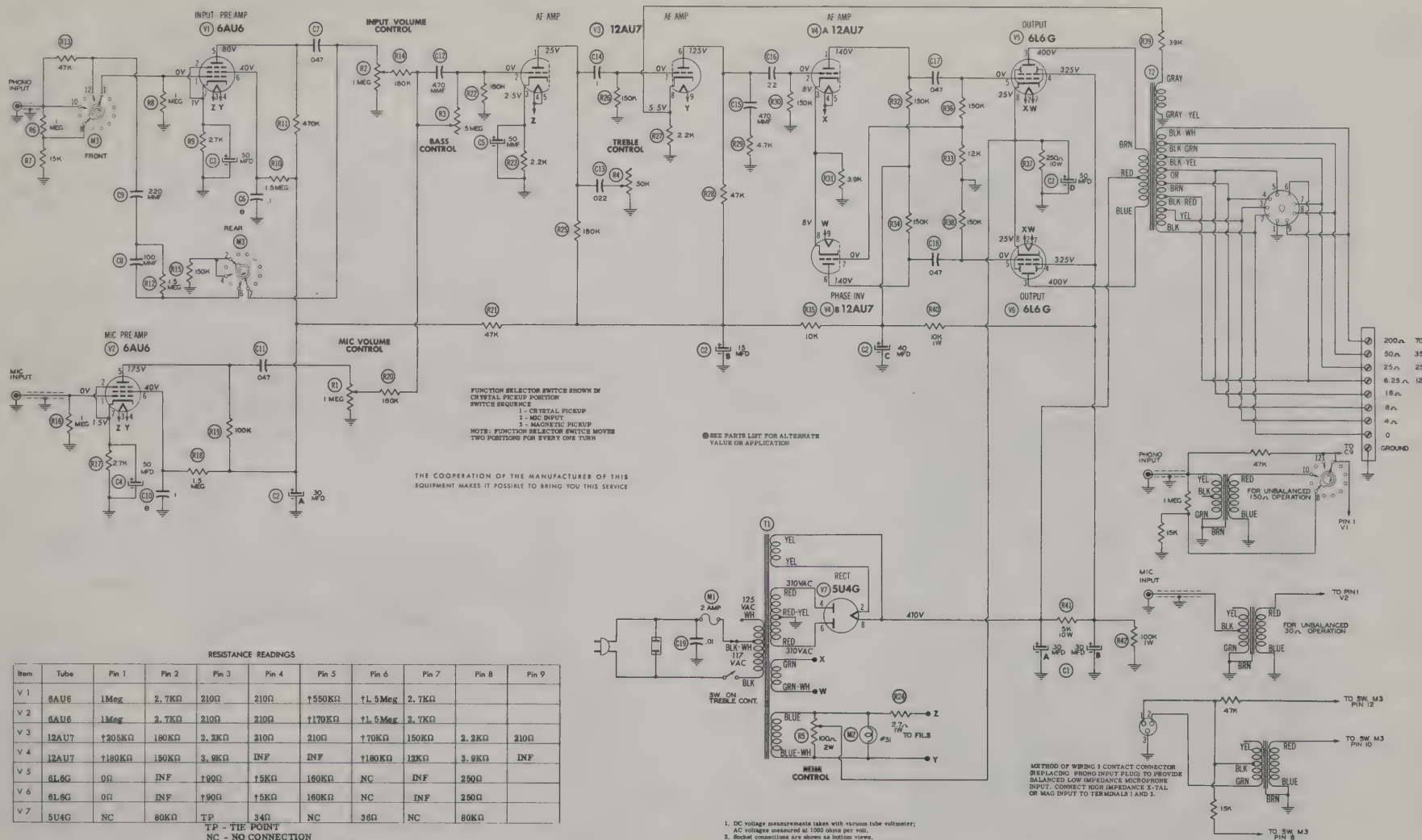
MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Pilot Light		#51, Bayonet
M3	Switch		Selector - XTAL, MIC, MAG (Rotary-Wafer Type)

CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON MODEL AU-58



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AU6	1Meg	2.7KΩ	210Ω	210Ω	†550KΩ	†1.5Meg	2.7KΩ		
V 2	6AU6	1Meg	2.7KΩ	210Ω	210Ω	†170KΩ	†1.5Meg	2.7KΩ		
V 3	12AU7	†205KΩ	180KΩ	2.2KΩ	210Ω	210Ω	†70KΩ	150KΩ	2.2KΩ	210Ω
V 4	12AU7	†180KΩ	150KΩ	3.9KΩ	INF	INF	†180KΩ	12KΩ	3.9KΩ	INF
V 5	6L6G	0Ω	INF	†90Ω	†5KΩ	160KΩ	NC	INF	250Ω	
V 6	6L6G	0Ω	INF	†90Ω	†5KΩ	160KΩ	NC	INF	250Ω	
V 7	5U4G	NC	80KΩ	TP	34Ω	NC	36Ω	NC	80KΩ	

TP - TIE POINT
NC - NO CONNECTION
† MEASURED FROM PIN 2 OF V7.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SYLVANIA
MODELS 614B, GR, H, RE (Ch. 1-605-1)

VOLUME CONTROL ON-OFF SWITCH

TUNING

SYLVANIA
MODELS 614B, GR, H, RE (Ch. 1-605-1)

TRADE NAME	Sylvania Models 614B, GR, H, RE (Ch. 1-605-1)
MANUFACTURER	Sylvania Electric Prods., Inc., Radio & Tel. Div., 254 Rano St., Buffalo 7, N. Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 12AT6 Det-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC - 1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	Direct	Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3	"	"	1400KC	Tune to 1400KC signal.	"	A6, A7	"
4	"	"	600KC	Tune to 600KC signal.	"	A8	Adjust for maximum output while rocking tuning gang.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amp.	6BJ6	6BJ6	7CM	
V4	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Output	50C5	50C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT	SYLVANIA PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	60	150	161-2008			TCT3116	TDL-8040-150	FMT-1530	
B	40	150							
C2	1000		166-1000D	DD-102	801-001	DC-521		K-1210	
C3	.047	200	162-0215	DF-503		PT4147	IMP2-S47	3302147	
C4	100		166-0100P	D6-101	GP1K-101	UC-531		K-1310	
C5	.01	200	160-0611	D6-103	GP2-333-103	PT411	IMP4-S1	330411	
C6	.047	200	162-0215	DF-503		PT4147	IMP2-S47	3302147	
C7	6800		†190-0014	D6-682	GP2-333-682	UC-5268		C-1268	
C8A	220		♦190-0017						
B	5000								
C	5000								
D	250								
E									
C9	.01	400	160-0611	D6-103	GP2-333-103	PT411	IMP4-S1	330411	
C10	.047	400	160-04147	DF-503		PT4147	IMP4-S47	3304147	
C11	.1	400	160-0401	DF-104		PT401	IMP4-P1	330401	

† Items C7 and R9 are combined in one unit.
♦ Items C8A, C8B, C8C, C8D, C8E, R10A, R10B and R10C are combined in one unit.
When replacing items separately, items C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	152-0024	Q13-139X	A47F6-2Meg		UT-449	Volume tapped at 550KΩ
B	Shaft		Not Req.	Not Req.	FS-3		Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12		US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R2	3.3Meg	½	181-0335	BTS-3.3Meg	
R3	22KΩ	½	181-0223	BTS-22K	
R4	15Meg	½	181-0156	BTS-15Meg	
R5	100KΩ	½	181-0104	BTS-100K	
R6	47KΩ	½	181-0473	BTS-47K	
R7	680KΩ	½	181-0684	BTS-680K	
R8	2.2Meg	½	181-0225	BTS-2.2Meg	

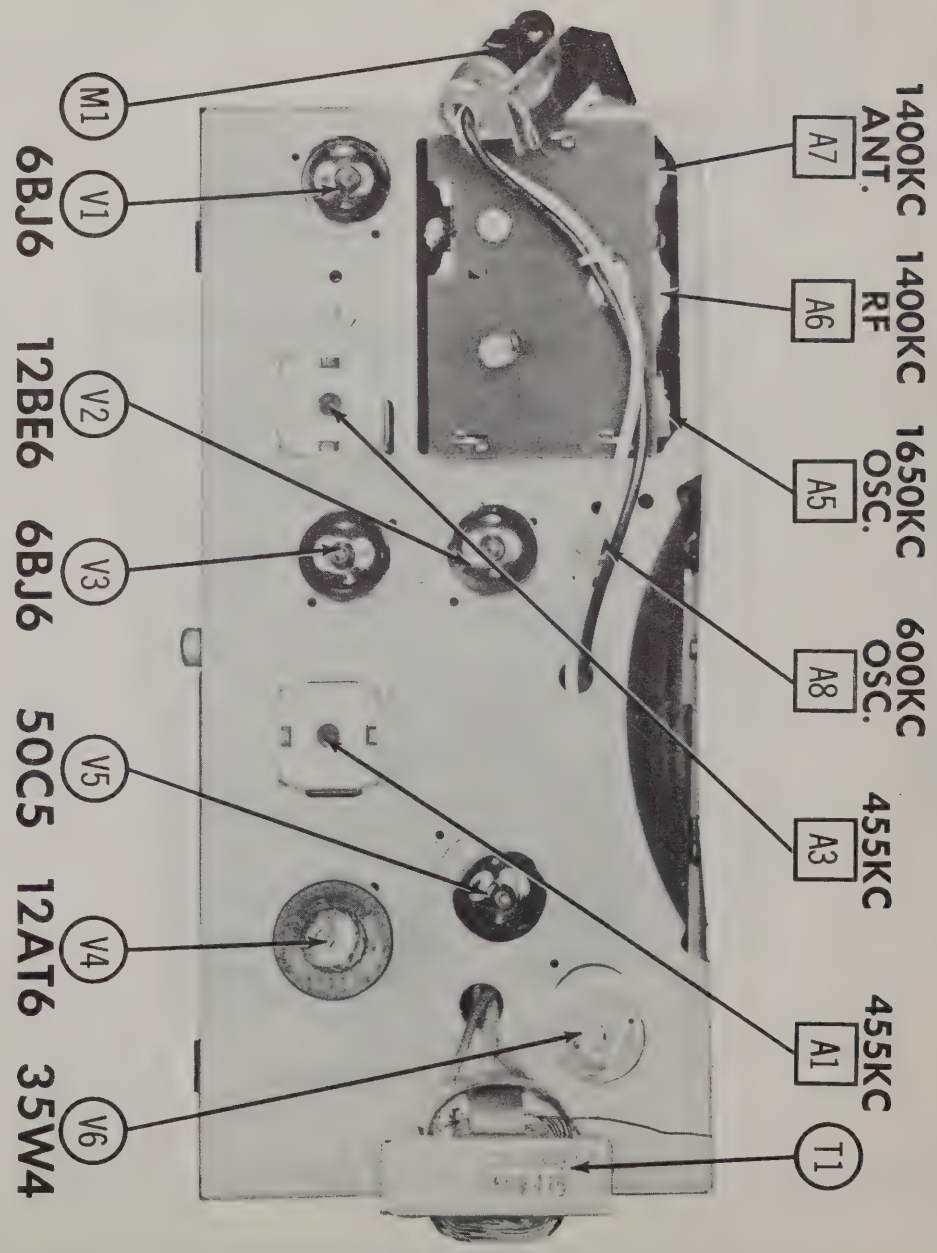
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R9	68KΩ	½	♦190-0014	BTS-68K	
R10A	10Meg	½	†190-0017	BTS-10Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R11	150Ω	1	182-0151	BTA-150	
R12	1200Ω	1	182-0122	BTA-1200	

♦ Items R9 and C7 are combined in one unit.
† Items R10A, R10B, R10C, C8A, C8B, C8C, C8D and C8E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.5Ω	143-0030	A-3330	A-3031		Z1103	24S50A	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.5Ω	539-0504	ST-105 ① Mod. P5-X	5A07 ①	① Use original mounting frame.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.4Ω		818-0044				Includes cabinet back - Note
L2	RF Coil	.8Ω	4.1*	112-0012				
L3	Osc. Coil	1.4Ω	9.5Ω	113-0027	14-1077	BC-387	70-Osc.	
L4	Input IF	10Ω	10Ω	121-0025	16-6758	BC-352	12-C1	
L5	Output IF	16Ω	16Ω	121-0027	16-6758	BC-353	12-C2	

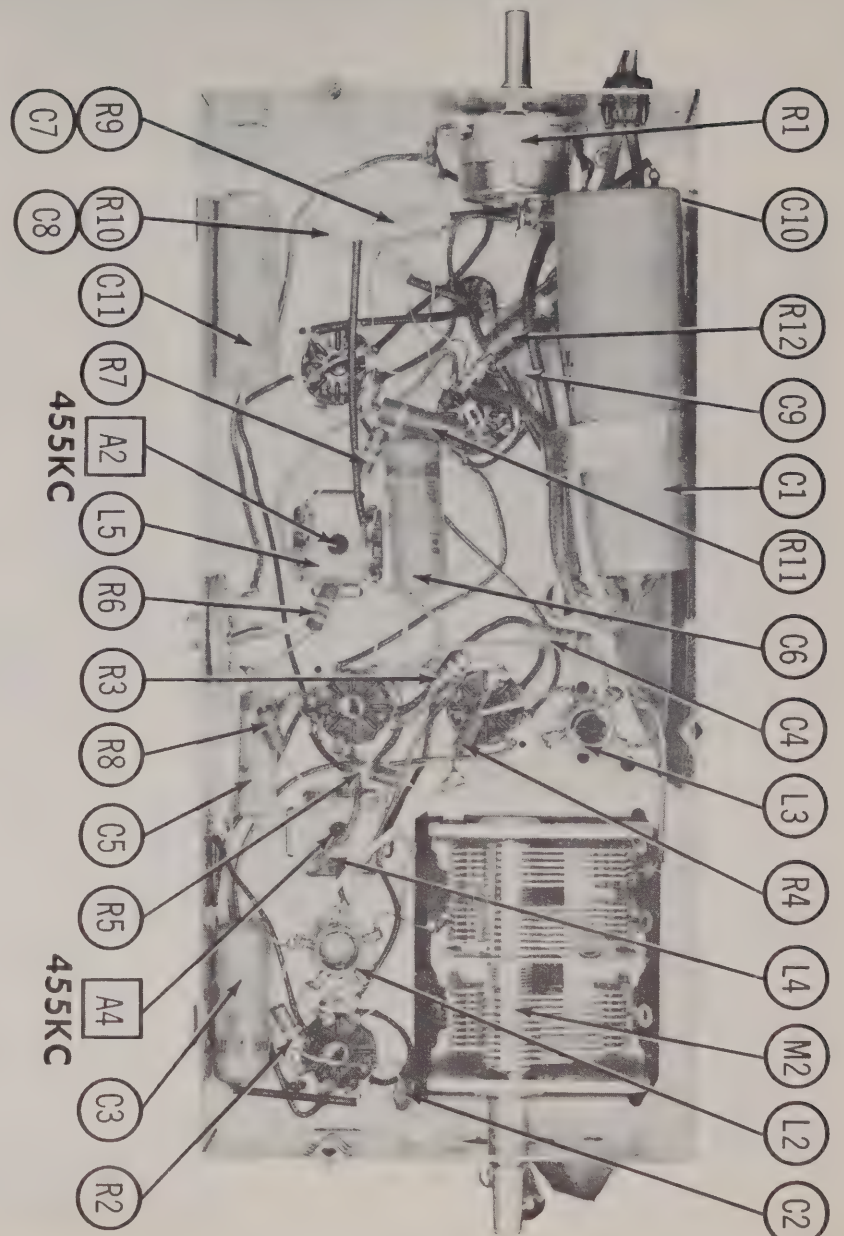
* Tapped at 2.8Ω

Note 1: Model 614B uses part no. 818-0045; model 614GR uses part no. 818-0046 and model 614RE uses part no. 818-0047.

MISCELLANEOUS

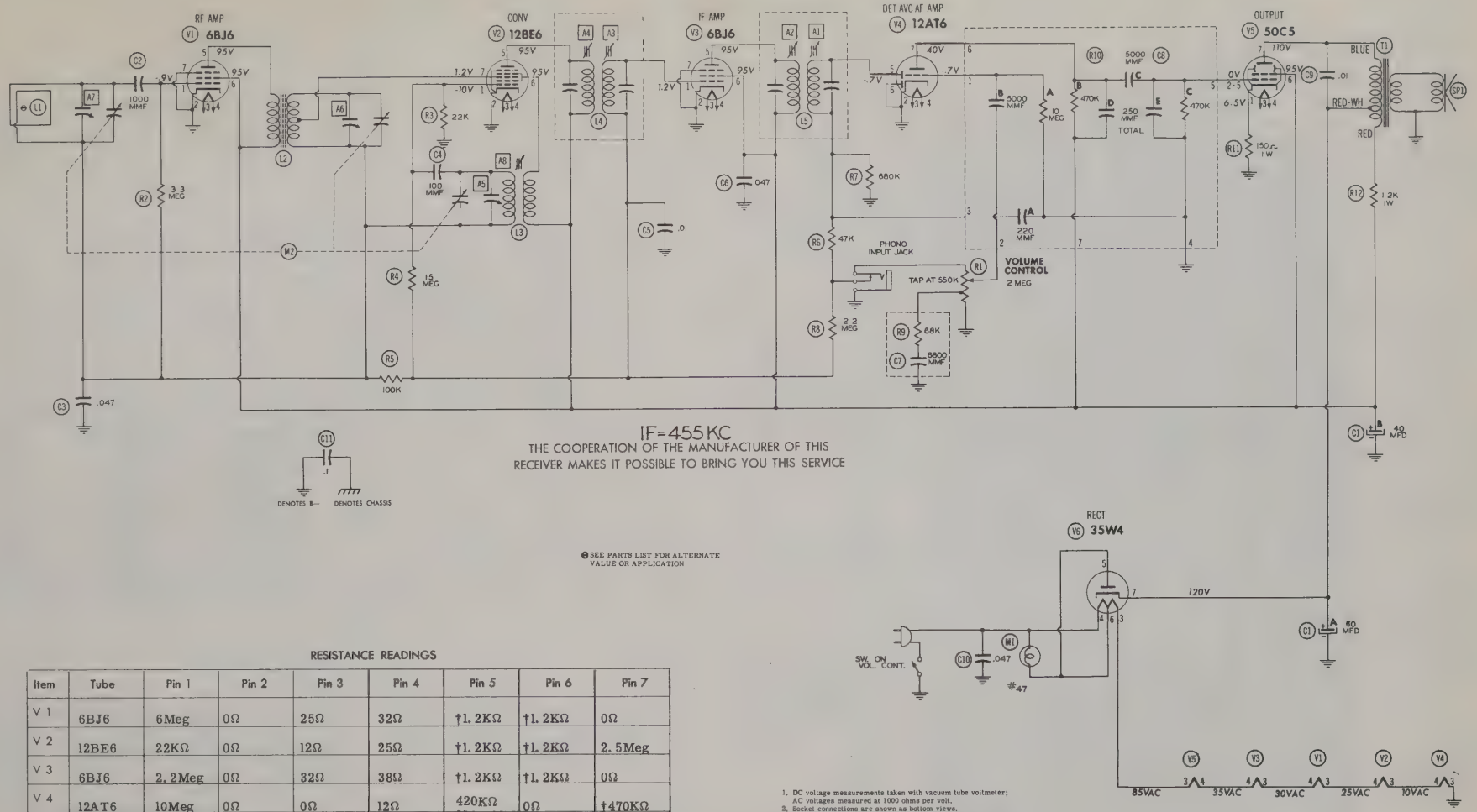
ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M1	Dial Light	611-0047	#47, Bayonet
M2	Tuning Cap.	170-0012	3 Gang (20-320MMF; 14-215MMF; 10-100MMF)
	Cabinet	813-0040	Model 614B
	Cabinet	813-0041	Model 614GR
	Cabinet	813-0039	Model 614H
	Cabinet	813-0042	Model 614RE
	Handle	818-0041	Model 614B
	Handle	818-0042	Model 614GR
	Handle	818-0040	Model 614H
	Handle	818-0043	Model 614RE
	Knob	740-0052	On-Off-Volume
	Knob	740-0051	Tuning
	Dial	743-0028	

CHASSIS—BOTTOM VIEW



SYLVANIA MODEL 614B (Ch. 1-605-1)

SYLVANIA MODEL 614B (Ch. 1-605-1)



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	6Meg	0Ω	25Ω	32Ω	†1.2KΩ	†1.2KΩ	0Ω
V 2	12BE6	22KΩ	0Ω	12Ω	25Ω	†1.2KΩ	†1.2KΩ	2.5Meg
V 3	6BJ6	2.2Meg	0Ω	32Ω	38Ω	†1.2KΩ	†1.2KΩ	0Ω
V 4	12AT6	10Meg	0Ω	0Ω	12Ω	420KΩ	0Ω	†470KΩ
V 5	50C5	150Ω	470KΩ	88Ω	38Ω	470KΩ	†1.2KΩ	†300Ω
V 6	35W4	NC	TP	88Ω	120Ω	110Ω	110Ω	80KΩ

† MEASURED FROM PIN 7 OF V6.
NC - NO CONNECTION
TP - TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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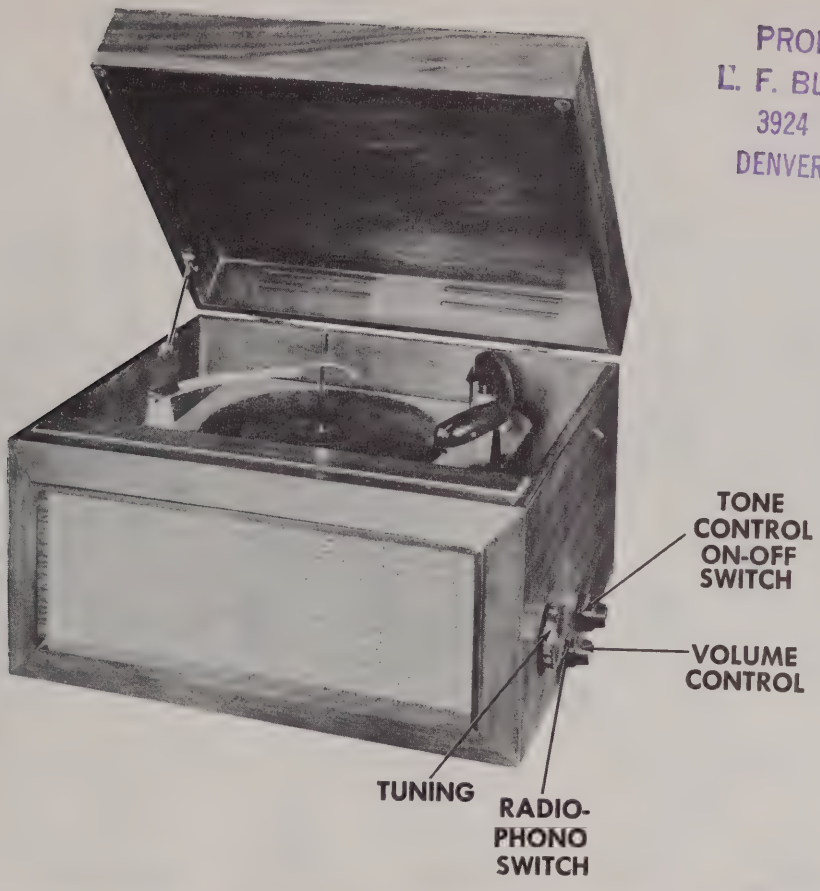

TRUETONE
MODEL D2556A

TRADE NAME	Truetone Model D2556A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated Radio-Phono Combination Receiver With 3 Speed Automatic Record Changer
TUBES (Six)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-Phase Inv., 12AV6 AF Amp., (2) 35C5 Output

POWER SUPPLY 105-125 Volts AC-60 Cycles RATING .33 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna terminal lug on tuning gang. Low side to B-	455KC (400∿Mod)	Point of non-interference	Across voice coil	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	Direct	Loop	1625KC	1625KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	"	1500KC	Tune to 1500KC signal	"	A5	"

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE SIMILAR V-M MODEL 950 - PHOTOFACT SET #216 FOLDER #11 OR RECORD CHANGER MANUAL CM-5.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

TRUETONE MODEL D2556A

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-Phase Inv.	12AV6	12AV6	7BT	
V4	AF Amplifier	12AV6	12AV6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.
C1A	▬80	150	522793			FP311.7	TM-4040	Q-005
B	■40	150						
C	▲20	150						
C2	5	50	504937			TC30	TD-5-50	MMT-0505
C3	.05	400	512029	DF-503		PT415	IMP4-S5	330415
C4	33		513028	D6-330	GP1K-330	UC-5433		K-1433
C5A	50		♦522907	PC-52 ♦	1403-03 ♦			
B	50							
C6	10000		513034	D6-103	811-01			
C7	.05	400	512029	DF-503		PT415	IMP4-S5	330415
C8	.05	400	512029	DF-503		PT415	IMP4-S5	330415
C9A	2500		*522790					
B	100							
C	50							
D	2500							
C10	5000		513051	D6-502	811-005	DC-525		
C11	.15	400	512041			PT4015	IMP4-P15	3304015
C12	47		513002		GP1K-470	UC-5447		K-1447
C13	5000		513051	D6-502	811-005	DC-525		
C14	5000		513051	D6-502	811-005	DC-525		
C15	5000		513051	D6-502	811-005	DC-525		
C16	.002	600	512201	D6-202	801-002	PT622	IMP6-D2	330622
C17	.002	600	512201	D6-202	801-002	PT622	IMP6-D2	330622
C18	.0047	600	522309	D6-472	811-0047	PT6247	IMP6-D47	3306247
C19	.1	400	512035	DF-104		PT401	IMP4-P1	330401

♦ Items C5A, C5B and R7 are combined in one unit.
* Items C9A, C9B, C9C, C9D, R10A and R10B are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Switch		522788					Phono-Radio Switch - Note 1
B	1Meg	½						Volume-tapped @400KΩ & 200KΩ - Note 2
R2A	2Meg	½	522787	Q13-139	A47-2Meg-Z	AB-76	U-55	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R2A

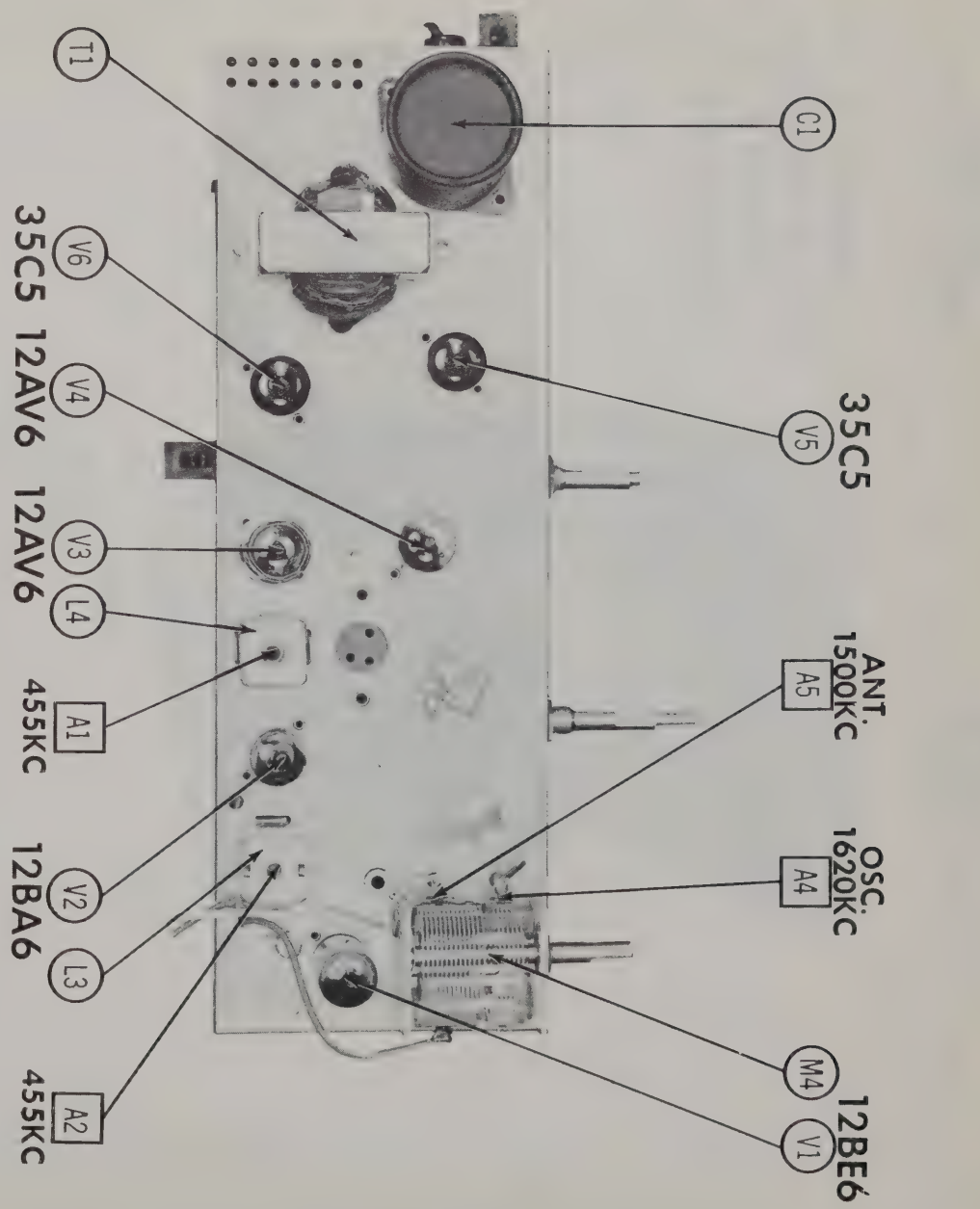
Note 1. R1 includes switch, control, C9A, C9B, C9C, C9D, R9A, and R9B.
Note 2. Some versions may use an alternate control part #523038.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R3	22KΩ	½	510160	BTS-22K	
R4	100Ω	½	510118	BTS-100	
R5	150Ω	½	510121	BTS-150	
R6	470KΩ	½		BTS-470K	Note 1
R7	47KΩ	½	♦522907	BTS-47K	
R8	470KΩ	½	510184	BTS-470K	
R9	2.2Meg	½	510193	BTS-2.2Meg	
R10A	100KΩ	½	†522790	BTS-100K	
B	100KΩ	½		BTS-100K	
R11	6.8Meg	½	510196	BTS-6.8Meg	
R12	470KΩ	½	510184	BTS-470K	
R13	68Ω	½	510115	BTS-68	
R14	4700Ω	½	510148	BTS-4700	
R15	470KΩ	½	510184	BTS-470K	
R16	220KΩ	½	510178	BTS-220K	
R17	220KΩ	½	510178	BTS-220K	
R18	82Ω	2	510217		
R19	220KΩ	½	510178	BTS-220K	
R20	2200Ω	½	510142	BTS-2200	
R21	1000Ω	1	510236	BTA-1000	
R22	33Ω	1	510209		
R23	1000Ω	½	510136	BTS-1000	

Note 1. Not used in some versions.
♦ Items R7, C5A, C5B are combined in one unit.
† Items R10A, R10B, C9A, C9B, C9C and C9D are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	4.1KΩ CT	6.8Ω SEC. 2 8.2Ω RES.	522782						

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.4Ω	O-522771		6A15	
SP2	6"	PM	3.4Ω	O-522771		6A15	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	3.4Ω		522772				
L2	Osc. Coil	.6Ω	8.5Ω	521550	14-1060 *	BC-387	71-OSC	
L3	Input IF	17Ω	17Ω	509433	16-6758	BC-352	12-C1	
L4	Output IF	42Ω	42Ω	521319	16-6758	BC-353	12-C2	

* Drill mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.104A	522785	1005A	RS-150	6S150	5P1	150	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRUETONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2	523010	55-T	GDJ	47	0-1 or S-1 & 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGES NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

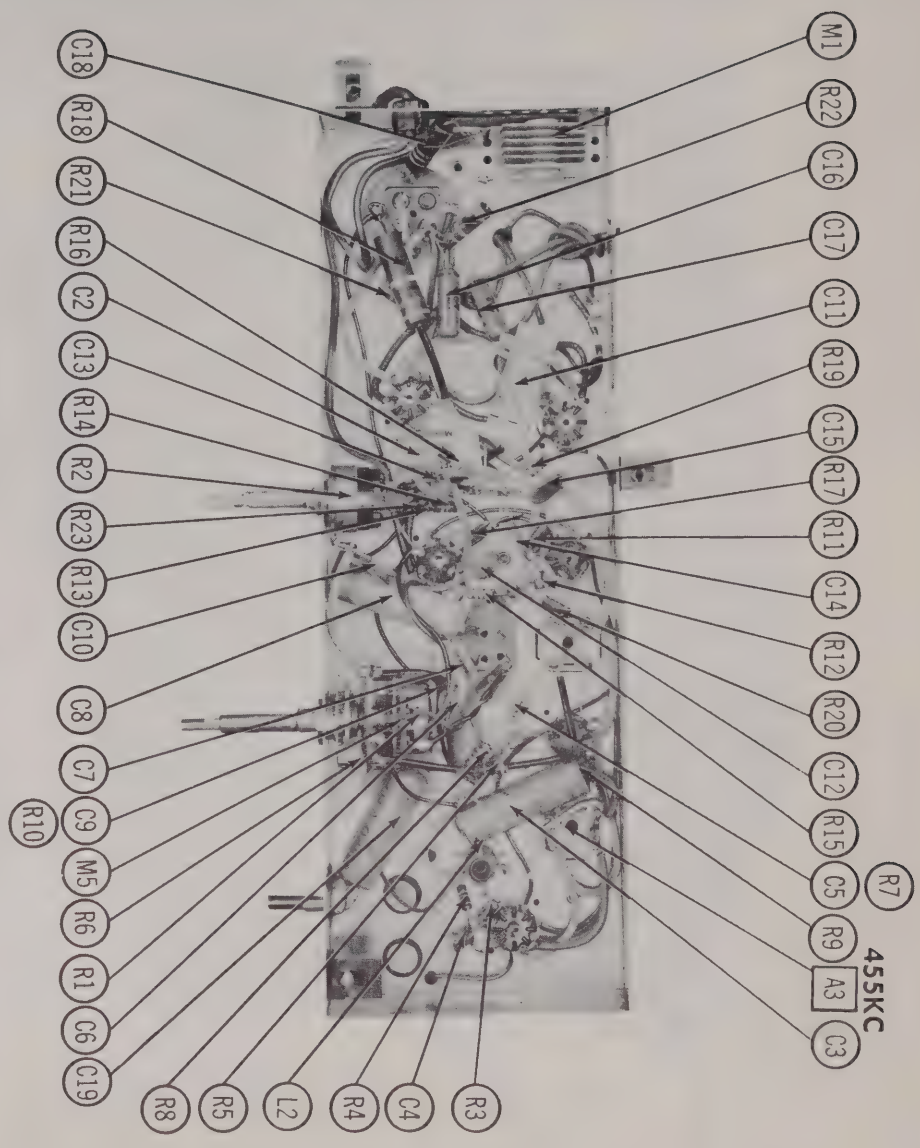
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA TRUETONE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3	523011	†S-66 or ♦†S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Cap.	522784	2 Gang (10-370MMF, 10-105MMF)
M5	Switch	509205	On-off (Record Changer)
M6	Phono Motor	523036	
	Cabinet	522781	
	Lid	522906	Cabinet
	Knob	522896	Phono-Radio Switch
	Knob	522894	Tone (on-off)
	Knob	522892	Tuning
	Knob	522898	Volume
	Name Emblem	522886	"Truetone"

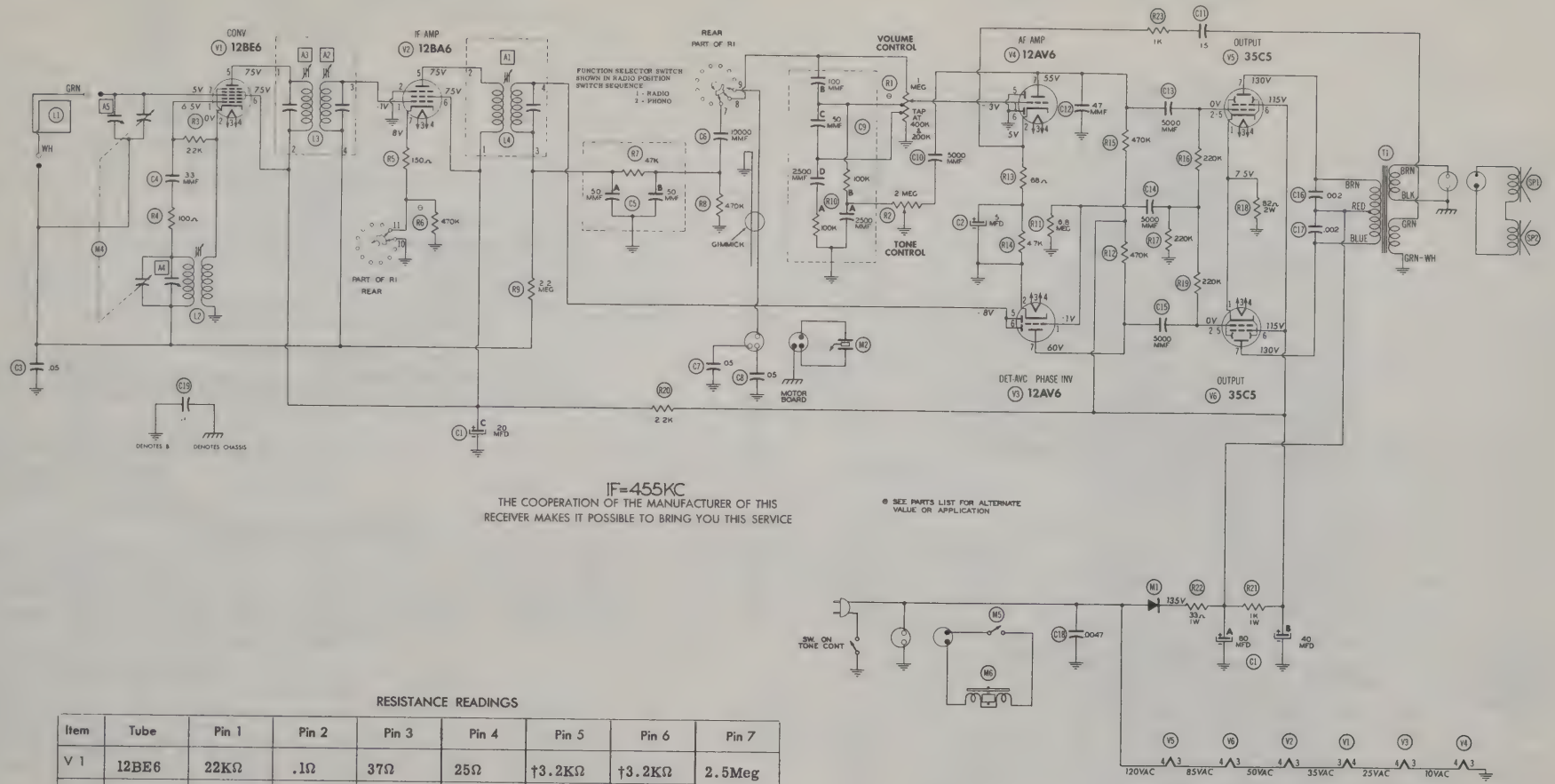
CHASSIS—BOTTOM VIEW



SET 274 FOLDER 14

TRUETONE MODEL D2556A

TRUETONE MODEL D2556A



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.1Ω	37Ω	25Ω	†3.2KΩ	†3.2KΩ	2.5Meg
V 2	12BA6	2.5Meg	0Ω	37Ω	50Ω	†3.2KΩ	†3.2KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	12.5Ω	25Ω	500KΩ	500KΩ	†470KΩ
V 4	12AV6	1Meg	4.7KΩ	0Ω	12.5Ω	0Ω	0Ω	†470KΩ
V 5	35C5	82Ω	440KΩ	85Ω	120Ω	440KΩ	†1KΩ	†170Ω
V 6	35C5	82Ω	440KΩ	50Ω	85Ω	440KΩ	†1KΩ	†170Ω

† MEASURED FROM OUTPUT OF M1

ALL READINGS TAKEN WITH RADIO-PHONO SWITCH IN "RADIO" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

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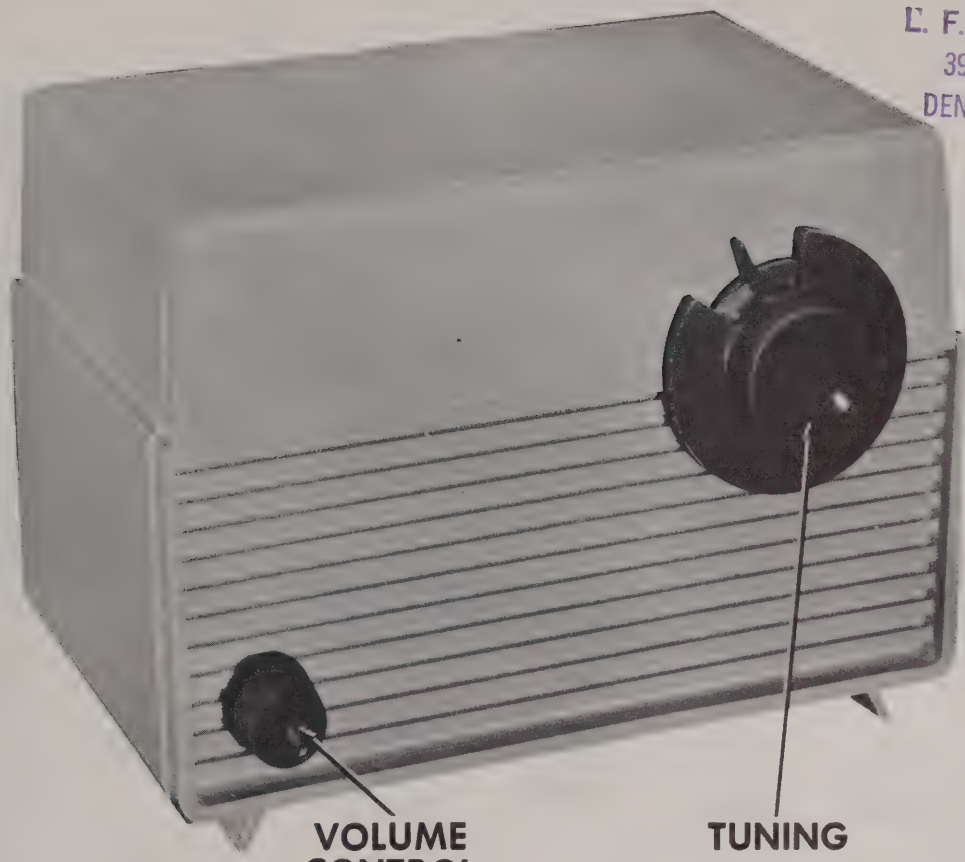
WESTINGHOUSE MODELS H-447T4, H-448T4, H-449T4 (Ch. V-2184-4)



WESTINGHOUSE MODELS H-447T4, H-448T4, H-449T4 (Ch. V-2184-4)

TRADE NAME	Westinghouse Model H-447T4, H-448T4, H-449T4 (Ch. V-2184-4)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N. J.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES(Four)	Types 12AU6 Conv., 12AV6 Det-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC RATING .21 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to antenna terminal lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output.
2	"	"	1625KC	"	"	A3	"
3	Direct	Loop	1400KC	1400KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-447T4 (Ch. V-2184-4)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	Converter	12AU6	12AU6	7BK	
V2	AF Amp-Det	12AV6	12AV6	7BT	
V3	Audio Output	50C5	50C5	7CV	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT	Westinghouse PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	40	150	V-14314-1				TDL-432	FMT-301	
B	20	150							
C	10	25							
C2	50			D6-500	GP1K-500	UC-545		K-1450	Note 1
C3	1.0			TCZ-1	NP0A-010				
C4A	220		♦V-10789-2	♦PC-151	♦1408-02				
B	5000								
C	5000								
D	250								
E									
C5	10000		R2CC63Z5Z103P	DD-103	811-01	DC-511			
C6	.047	400	V-10157-4473M	DF-503		PT4147	IMP4-S47	3304147	
C7	.05	400	RCP10W4503M	DF-503		PT415	IMP4-S5	330415	

Note 1. Some versions use .47MMF in this application. (Part no. V-8963-4788)
♦ Items C4A, C4B, C4C, C4D, C4E, R4A, R4B and R4C are combined in one unit.
When replacing items seperately, C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	V-9993-15	Q13-139	A47-2Meg-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	K8S-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	3.3Meg	½	RC20AE335M	BTS-3.3Meg	Note 1
R3	6800Ω	½		BTS-6800	
R4A	6.8Meg	½	♦V-10789-2	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

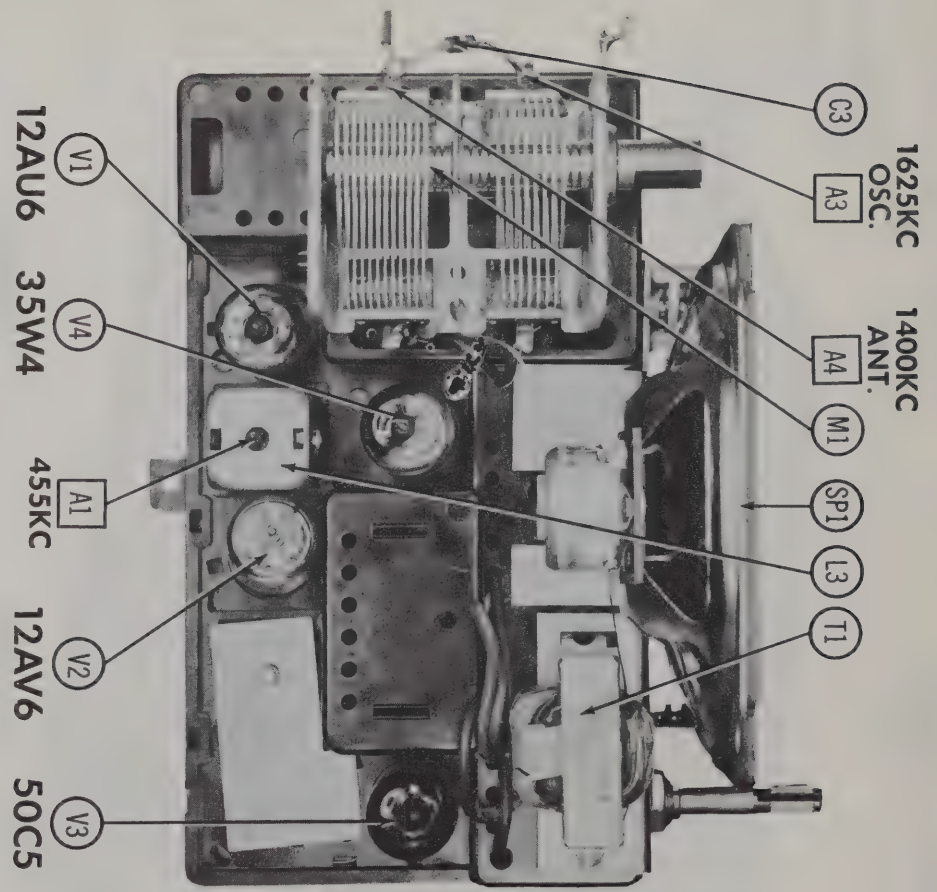
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R5	180Ω	½	RC20AE181K	BTS-180	
R6	6800Ω	½	RC20AE682M	BTS-6800	
R7	15Ω	2	V-6067-13		

♦ Items R4A, R4B, R4C, C4A, C4B, C4C, C4D and C4E are combined in one unit.
Note 1: Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Westinghouse PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.1KΩ	3.2Ω	V-11561-1	A-3332	A-3025	S-12X	Z1101	26S58	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	V-11554-1	ST-113 Mod. P4-X	4A07	

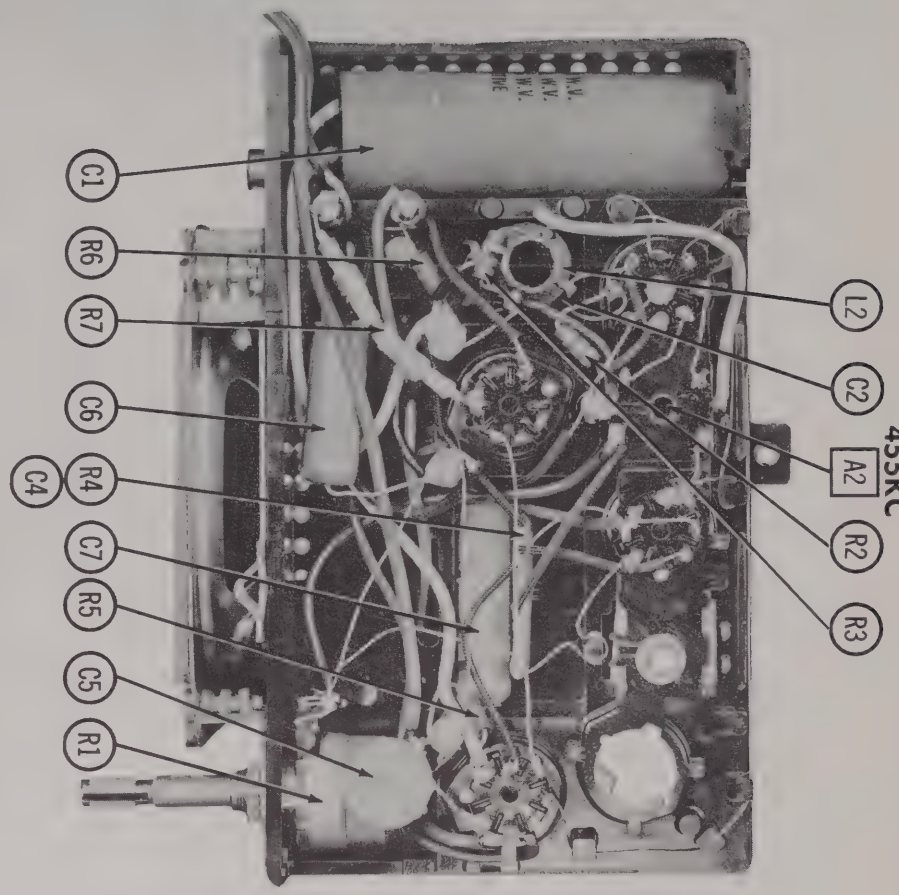
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.3Ω		V-14699-1				Includes cabinet back.
L2	Osc. Coil	3.2Ω	11Ω	V-14315-1				Tertiary winding = 2.4Ω
L3	IF Trans.	25Ω *	25Ω	V-14317-1				* Tapped @ 1Ω.

MISCELLANEOUS

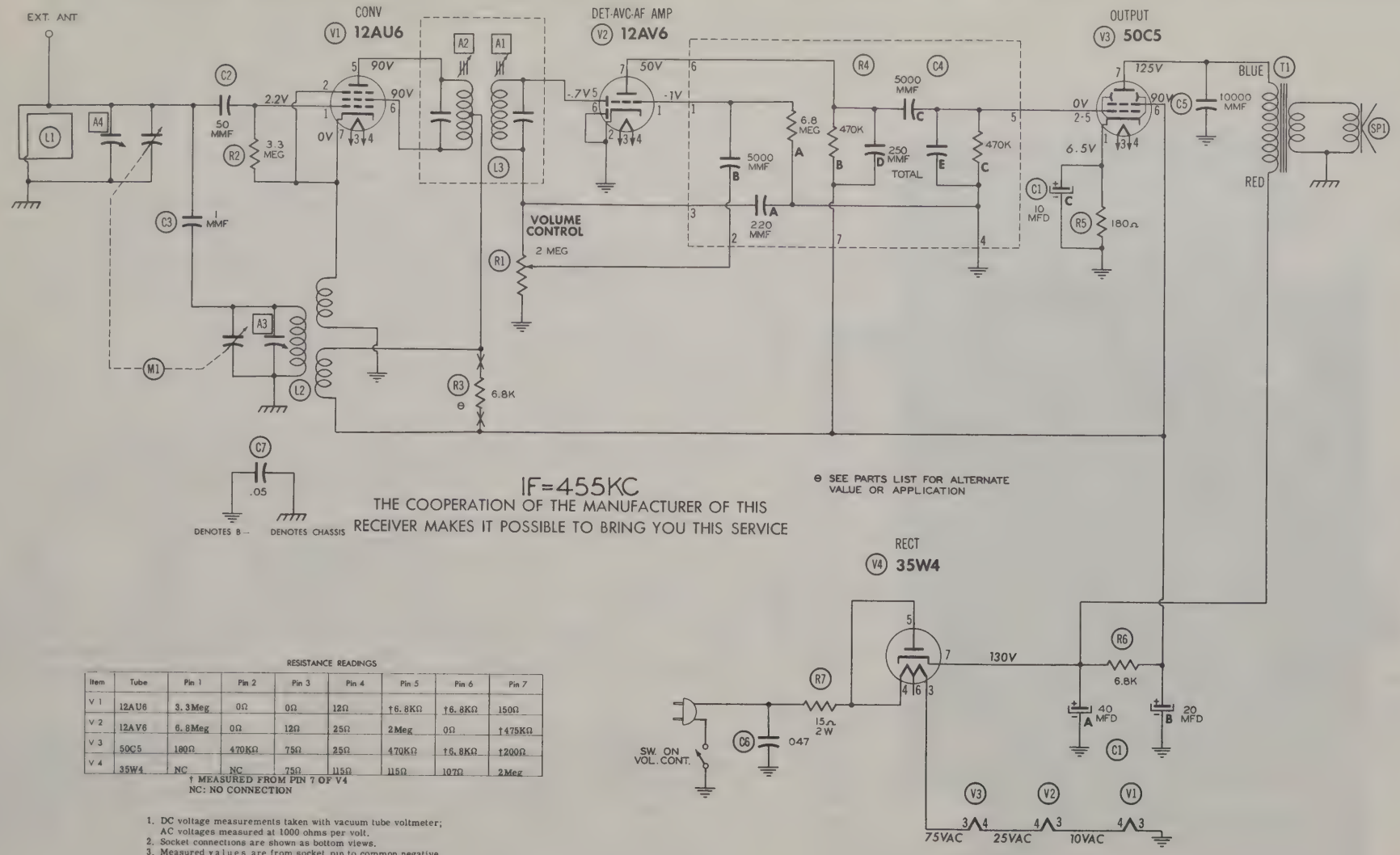
ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Cap.	V-11277-3	2 Gang (37-405MMF; 17-110MMF.)
	Cabinet	V-1289-5	Model H-447T4
	Cabinet	V-1289-6	Model H-448T4
	Cabinet	V-1289-7	Model H-449T4
	Knob	V-14311-1	Dial Pointer - Model H-447T4
	Knob	V-14311-2	Dial Pointer - Models H-448T4, H-449T4
	Knob	V-14483-5	On-Off-Volume - Model H-447T4
	Knob	V-14483-6	On-Off-Volume - Models H-448T4, H-449T4

CHASSIS—BOTTOM VIEW



WESTINGHOUSE
MODEL H-447T4 (Ch. V-2184-4)

WESTINGHOUSE
MODEL H-447T4 (Ch. V-2184-4)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AU6	3.3Meg	0Ω	0Ω	12Ω	†6.8KΩ	†6.8KΩ	150Ω
V 2	12AV6	6.8Meg	0Ω	12Ω	25Ω	2Meg	0Ω	†475KΩ
V 3	50C5	180Ω	470KΩ	75Ω	25Ω	470KΩ	†6.8KΩ	†200Ω
V 4	35W4	NC	NC	75Ω	115Ω	115Ω	107Ω	2Meg

† MEASURED FROM PIN 7 OF V4
NC: NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL H-876T24

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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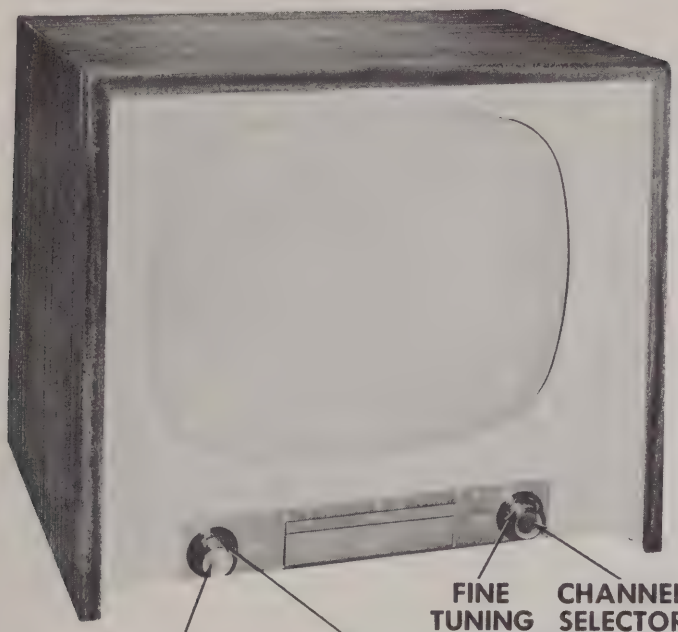

WESTINGHOUSE MODEL H-876T24 (Ch. V-2314-25)

TRADE NAME	WESTINGHOUSE	MODELS	CHASSIS
		H-853K24, H-854K24, H-869K24, H-870K24, H-875K24, A, C, H-876T24, H-877T24, H-878K24, H-881K24	V-2314-15, -25
		H-853KU24, H-854KU24, H-869KU24, H-870KU24, H-875TU24, C, H-876TU24, H-877TU24, H-878KU24, H-881KU24	V-2324-203

MANUFACTURER	Westinghouse Electric Corp., Television & Radio Division, Metuchen, N. J.
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 2.03 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet- Rear View 11
Capacitor Identification 4, 9
Chassis-Top View 3
RF Tuner 3
Resistor Identification 19, 20
Photographs (Cont)
Trans., Inductor & Alignment Identification 17
Resistance Measurements 8
Servicing in the Field 18
Schematic (Alternate Tuner) 10
Schematic (TV) 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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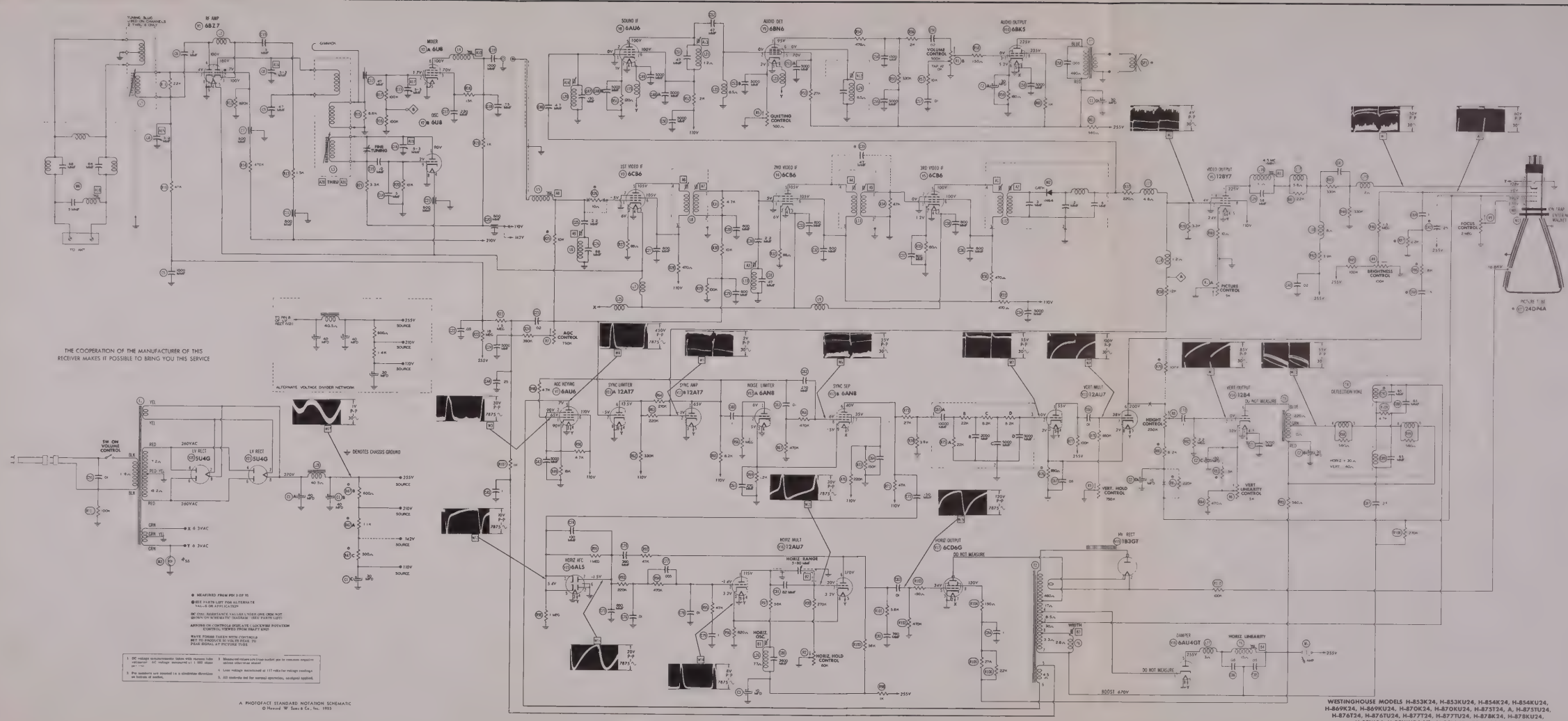

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

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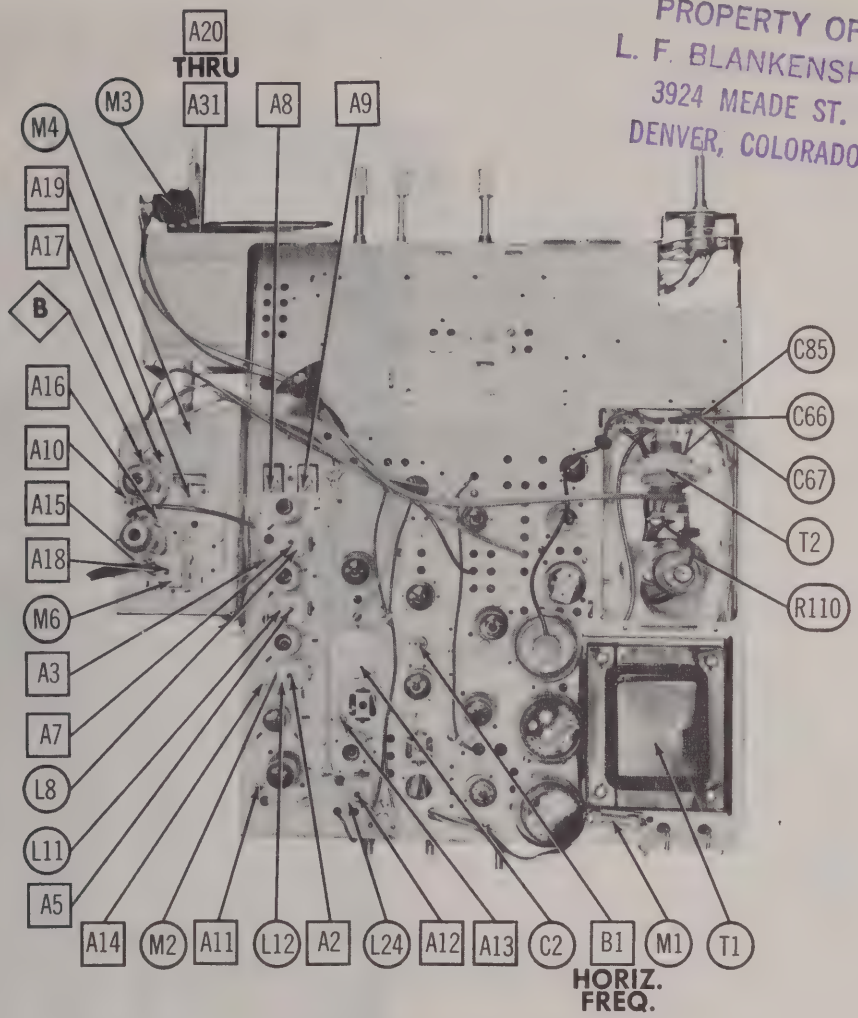
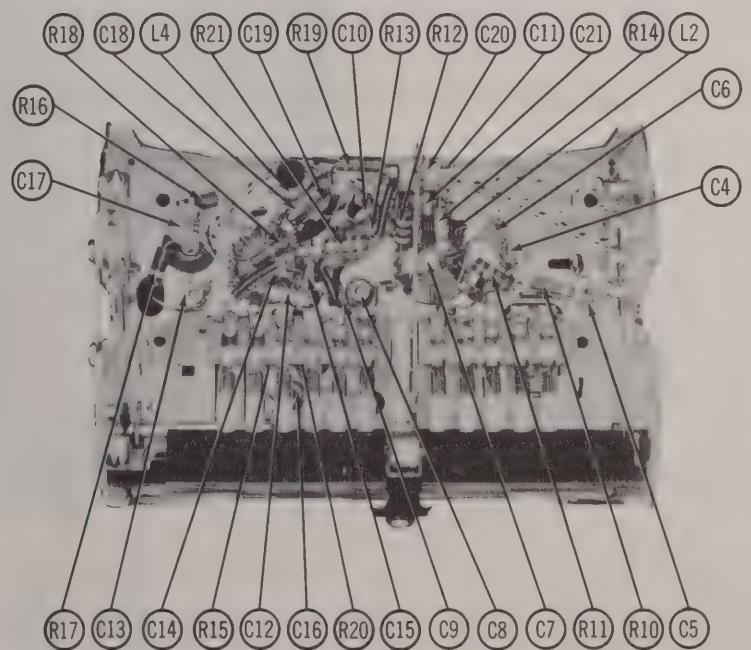
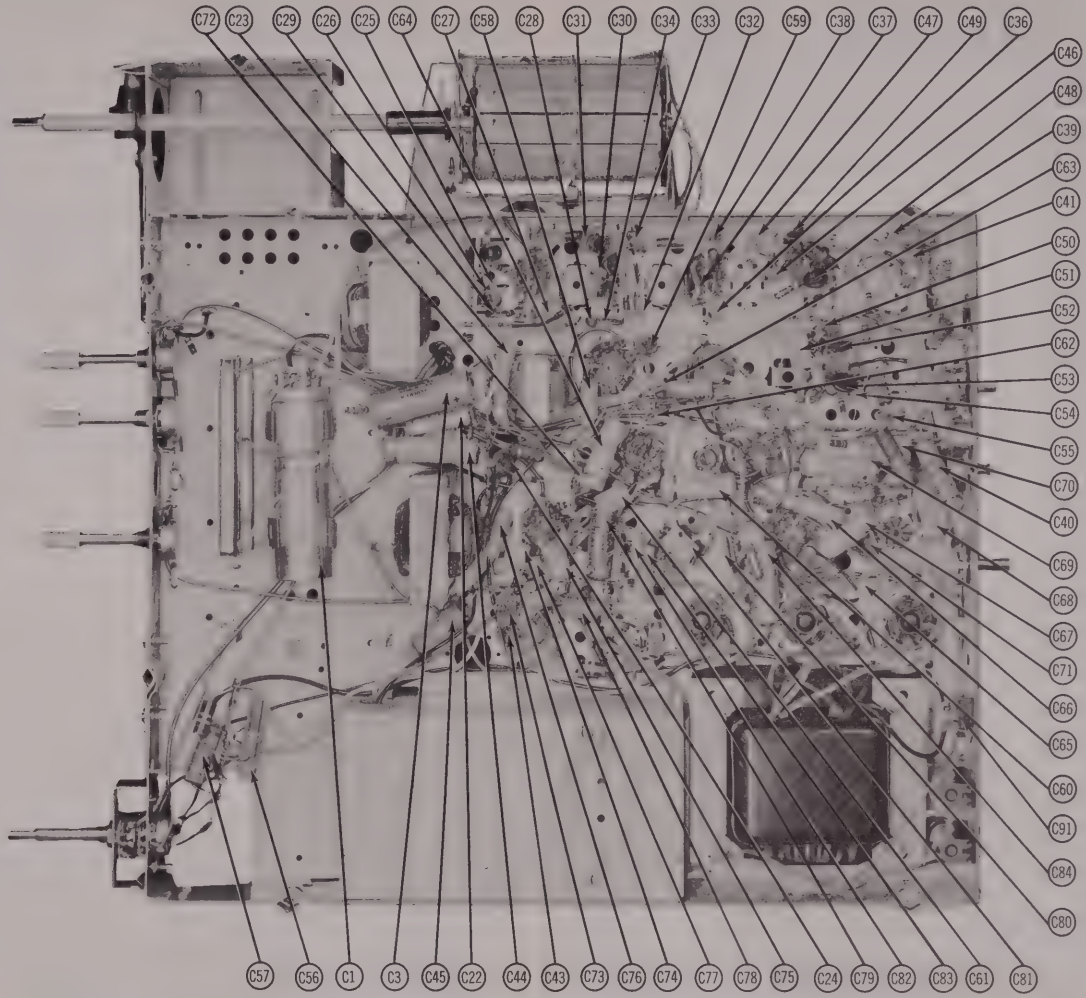


CHASSIS TOP VIEW



RF TUNER-BOTTOM VIEW

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

TUBE PLACEMENT CHART

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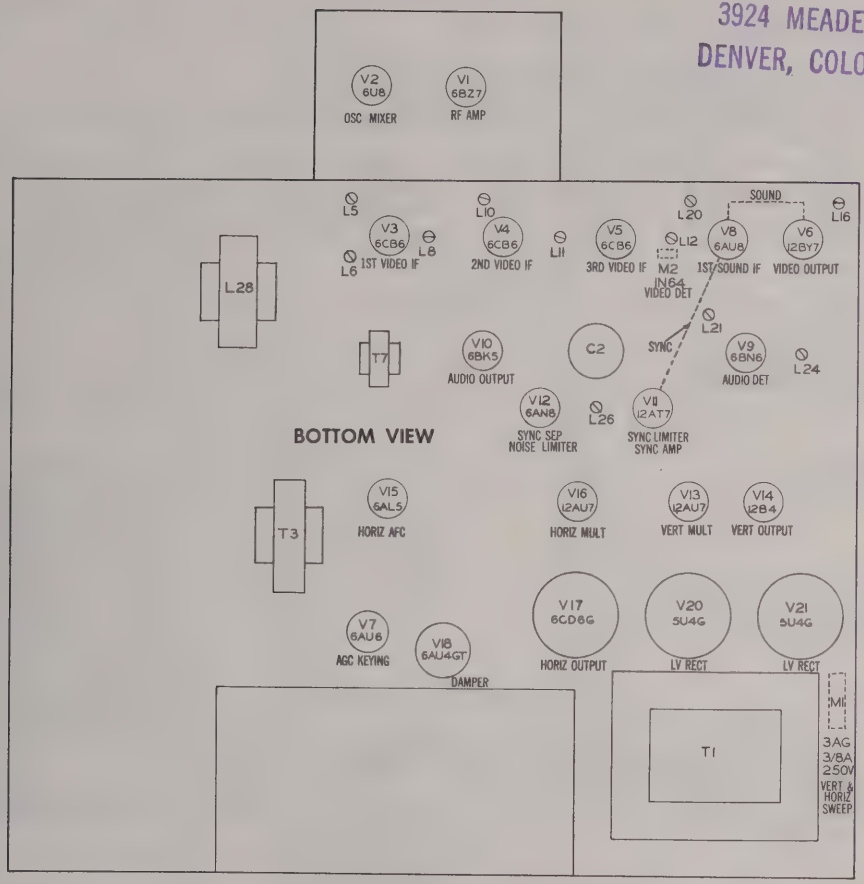


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V7, V22**
Has pic, no sound - **V8, V9, V10**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V12, V13**
No horiz. sync - **V12, V15, V16**
No vert. or horiz. sync - **V11, V12**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V22, Fuse (M1)**
No vertical deflection - **V13, V14**
Poor vert. linearity or foldover - **V13, V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20, V21**
Vert. off freq. - **V12, V13**
Horiz. off freq. - **V12, V15, V16**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V16) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove V1 from its socket to avoid the possibility of undesirable beat response during alignment. Rotate channel selector knob to channel 13.
Connect a 470MMF capacitor across vertical input terminals of the scope.
Connect the negative lead of a 9 volt battery to the ungrounded side of C24 positive lead to chassis.
If a separate marker generator is used couple it loosely to sweep generator output cable.
If peaks appear at two different slug settings, use the one at farthest counter clockwise position.
Use high scope gain and only enough sweep generator output to provide usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis near V3.	44MC (10MC Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A1, A2	Attach detuning clips (use alligator clips) to pin 5 plate of V3 and V4. Adjust A1 for maximum response at 44MC. Adjust A2 for symmetrical response curve with markers as shown in Fig. 1. Remove detuning clips from V3 and V4.
2.	"	High side to pin 1 (grid) of V3. Low side to chassis near V3.	Not used	47.25MC (400∿Mod)	"	"	A3	Adjust for MINIMUM response on scope.
3.	"	High side to pin 1 (grid) of V4. Low side to chassis near V4.	44MC (10MC Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	"	"	A4, A5	Attach detuning clip to pin 5 of V3. Adjust A4 for maximum gain at 44MC. Adjust A5 for symmetrical response with markers as shown in Fig. 2. Remove detuning clip from V3.
4.	"	High side to pin 1 (grid) of V3. Low side to chassis near V3.	"	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	"	"	A6, A7, A10	Detune A10 on tuner several turns counter clockwise. Adjust A6 for maximum response at 44MC. Adjust A7 for symmetrical response with markers as shown in Fig. 3. Adjust A10 so that dip it produces on response curve is centered at 44MC. replace V1 (6BZ7) in tuner.
5.	Fig. 5	Thru matching network (Fig. 5) across antenna terminals. Keep leads as short as possible.	213MC (10MC Swp)	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	13	"	A8, A9	Set fine tuning control to its mid-range position. Clip the high side of the marker generator to the converter (V2) tube shield. Leave low side disconnected. Adjust A8 for symmetrical response as shown in response curve (Fig. 4). Adjust A9 for MINIMUM marker amplitude at 41.25MC. Response curve should be satisfactory on all other channels.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (Unmod)	Any unused channel	Use VTVM. DC probe thru detector probe (Fig. 6) to pin 11 (cathode) of picture tube. Common lead to chassis.	A11	Adjust for MINIMUM deflection on meter.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 15KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (15KC Swp)	4.5MC	Any unused channel	Vert. Amp. across volume control	A12	Set generator for a strong signal and adjust A12 for maximum response at 4.5MC.
8.	"	"	"	"	"	"	A13, A14	Set generator to give MINIMUM useful indication on scope. Adjust A13 and A14 for maximum response centered about 4.5MC. Retouch A12 for maximum response at 4.5MC.
9.	"	"	Not used	4.5MC (400∿Mod)	"	"	R5	Starting with very low signal input gradually increase the level at the same time rotating the quieting control (R5) back and forth until the signal level reaches the point where the AM output on scope dips to zero with a rise on each side as R5 is rotated. Set R5 for zero output at this signal level.

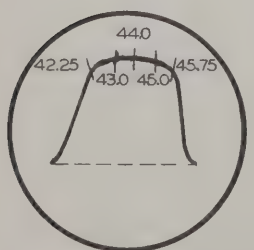


FIG.1

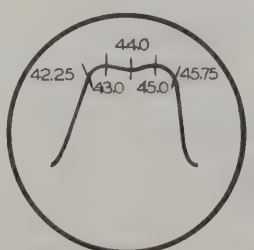


FIG.2

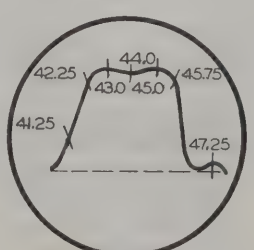


FIG.3

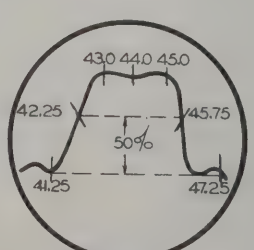


FIG.4

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT USING TV SIGNAL

Tune the receiver to a TV station and connect an attenuator between receiver and antenna so that the signal input to receiver may be varied from weak to strong.
Set the quieting control (R5) to its mid-range position. Apply a strong signal and adjust A12 for maximum program sound. If two widely separated peaks appear use the one with A12 furthest counter clockwise. If two peaks occur within a narrow range of adjustment, the signal strength being applied is too low or the buzz control is improperly adjusted.
Reduce the signal to its lowest usable level and adjust A12, A13 and A14 for maximum program sound. If two peaks appear at different slug settings use the one at farthest counter clockwise position.
Readjust signal input to its lowest useable level and recheck setting of A13 and A14.
Apply a very weak signal and adjust R5 for minimum noise. Do not leave R5 at maximum counter clockwise position.

RF AND MIXER ALIGNMENT FOR V-14170-2 TUNER USED IN CH. V-2314-25

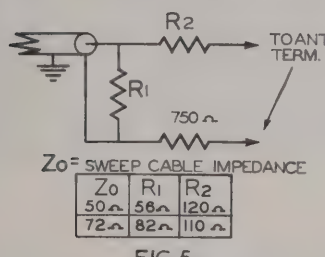
Disconnect the white wire (AGC buss) from tuner terminal "D". Connect the negative side of 1.5 volt battery to this terminal positive lead to chassis. NOTE: The series resonant trap (A18) should be adjusted in the field whenever local interference on channel 2 is encountered.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 5	Thru matching network (Fig. 5) across antenna terminals.	207MC (12MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (B). Low side to tuner chassis.	A15, A16, A17	Adjust for response similar to Fig. 7 with markers above 90%.
11.	"	"	213MC (12MC Swp)	211.25MC 215.75MC	13	"		If markers fall below 70% on any channel make compromise adjustment of A15, A16 and A17 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (12MC Swp)	199.25MC 203.75MC	11			
			195MC (12MC Swp)	193.25MC 197.75MC	10			
			189MC (12MC Swp)	187.25MC 191.75MC	9			
			183MC (12MC Swp)	181.25MC 185.75MC	8			
			177MC (12MC Swp)	175.25MC 179.75MC	7			
			85MC (12MC Swp)	83.25MC 87.75MC	6			
			79MC (12MC Swp)	77.25MC 81.75MC	5			
			69MC (12MC Swp)	67.25MC 71.75MC	4			
			63MC (12MC Swp)	61.25MC 65.75MC	3			
			57MC (12MC Swp)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT FOR V-14170-2 TUNER

Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A19. It should be noted that this is an all channel oscillator adjustment and should not be used to correct any one channel. If A19 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel oscillator adjustments are reached thru a hole just above the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect bias as under RF and Mixer Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Fig. 5	Thru matching network (Fig. 5) across antenna terminals.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A20	Adjust to place sound marker in trap notch as in Fig. 8. Video marker should be at 50%. Restore tuner AGC lead to its original connection at tuner terminal "D".
			207MC (10MC Swp)	205.25MC 209.75MC	12		A21	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A22	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A23	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A24	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A25	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A26	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A27	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A28	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A29	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A30	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A31	



Zo	R1	R2
50 Ω	56 Ω	120 Ω
72 Ω	82 Ω	110 Ω

FIG. 5

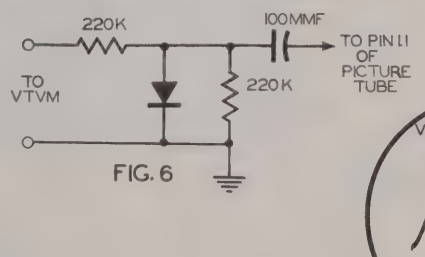


FIG. 6

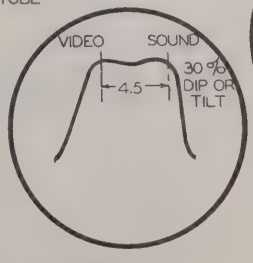


FIG. 7

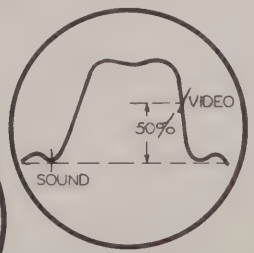


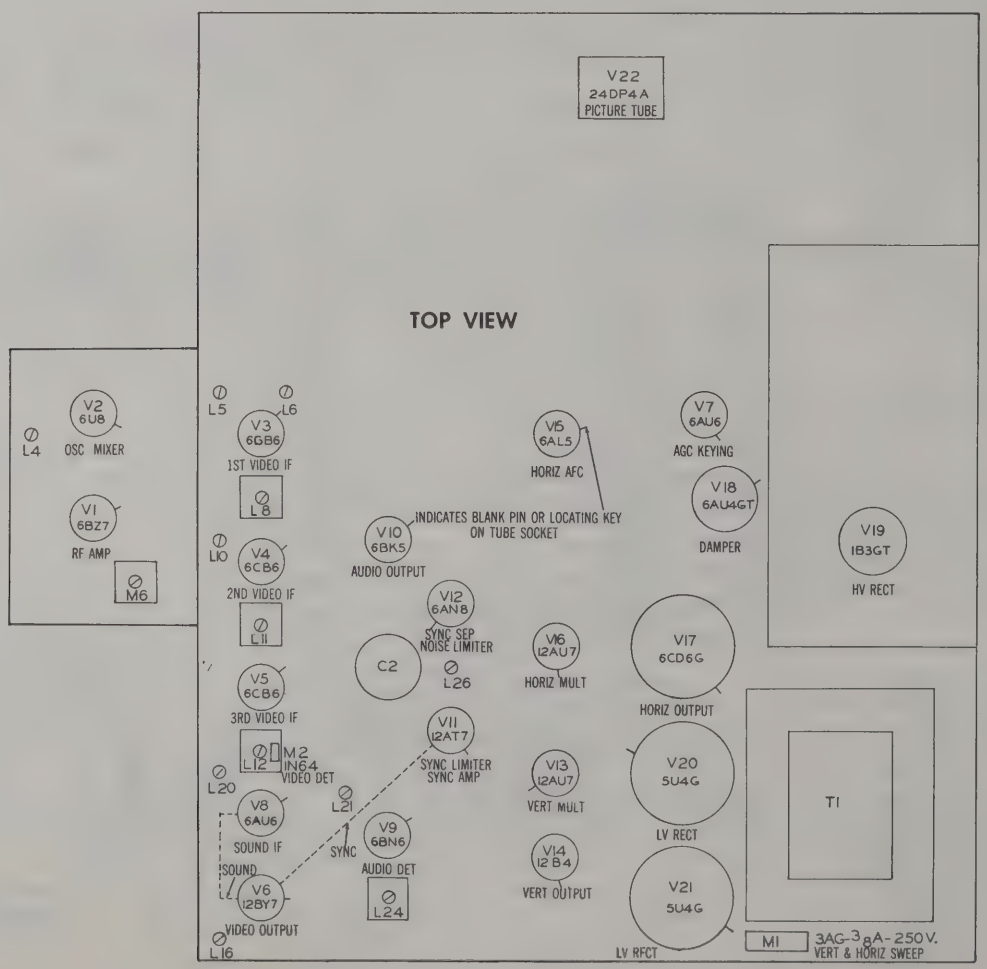
FIG. 8

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

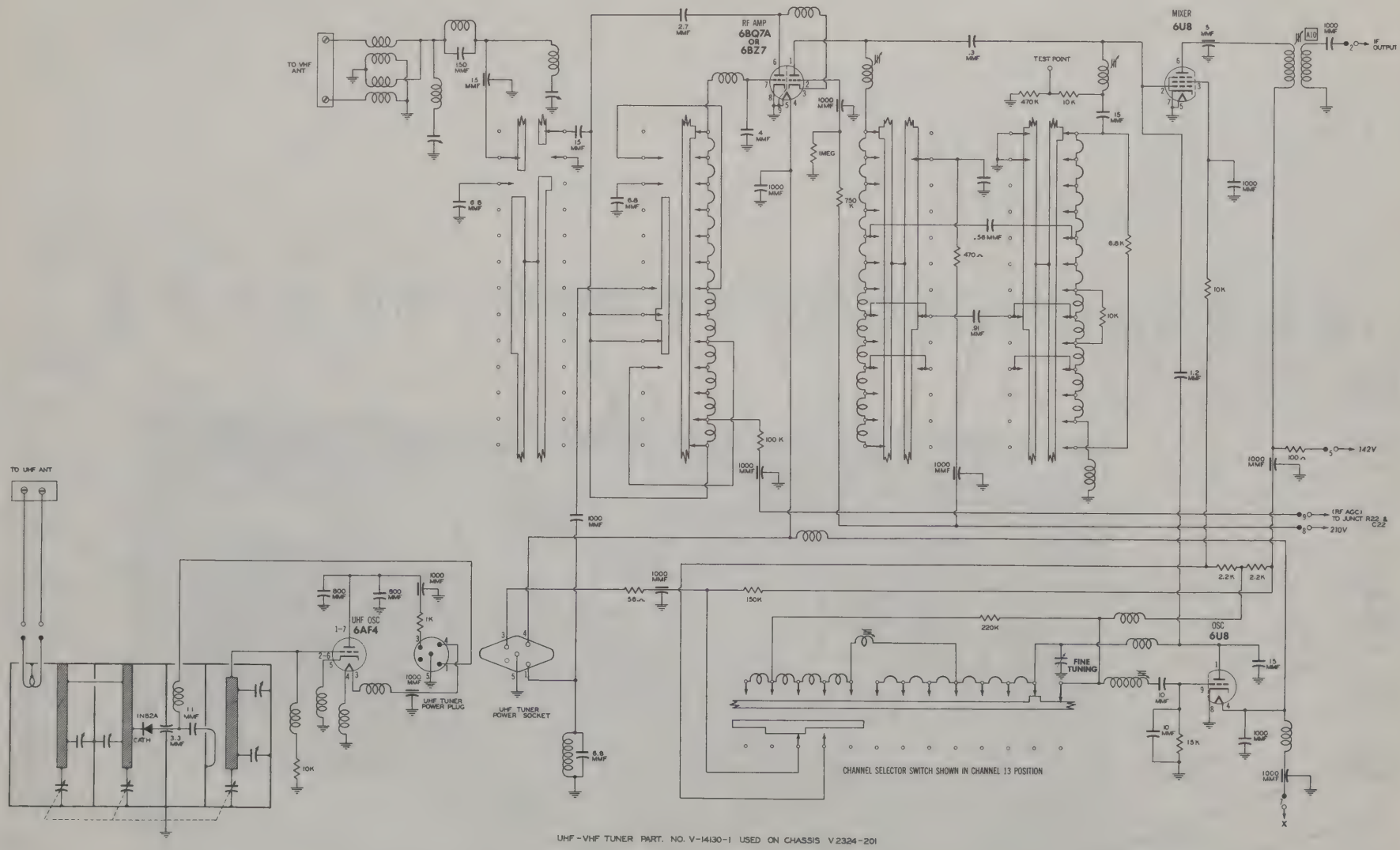
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†2. 2KΩ	†310KΩ	INF	0Ω	. 1Ω	INF	2Meg	0Ω	0Ω
V 2	6U8	†5. 5KΩ	200KΩ	†18KΩ	. 1Ω	0Ω	†3. 2KΩ	0Ω	0Ω	10KΩ
V 3	6CB6	110KΩ	68Ω	. 1Ω	0Ω	†2. 8KΩ	†2. 8KΩ	0Ω		
V 4	6CB6	110KΩ	68Ω	. 1Ω	0Ω	†2. 8KΩ	†2. 8KΩ	0Ω		
V 5	6CB6	. 4Ω	150Ω	. 1Ω	0Ω	†3. 8KΩ	†3. 8KΩ	0Ω		
V 6	12BY7	250Ω	3. 3KΩ	0Ω	. 1Ω	. 1Ω	0Ω	†3. 9KΩ	†2. 2KΩ	0Ω
V 7	6AU6	†15KΩ	†7KΩ	0Ω	. 1Ω	500KΩ	†2. 2KΩ	18KΩ		
V 8	6AU6	. 3Ω	0Ω	. 1Ω	0Ω	†3. 4KΩ	†3. 4KΩ	120Ω		
V 9	6BN6	300Ω	8. 5Ω	0Ω	. 1Ω	†27KΩ	6. 5Ω	†330KΩ		
V 10	6BK5	†1KΩ	150KΩ	150KΩ	. 1Ω	0Ω	180Ω	150KΩ	†1. 6KΩ	INF
V 11	12AT7	†10. 5KΩ	15KΩ	0Ω	. 1Ω	. 1Ω	†110KΩ	100KΩ	0Ω	0Ω
V 12	6AN8	1Meg	1Meg	1. 2KΩ	0Ω	. 1Ω	†30KΩ	†100KΩ	1Meg	1. 2KΩ
V 13	12AU7	†100KΩ	60KΩ	680Ω	. 1Ω	. 1Ω	▲550KΩ	1. 1Meg	680Ω	0Ω
V 14	12B4	1KΩ	2. 2Meg	0Ω	. 1Ω	. 1Ω	INF	2. 2Meg	INF	†900Ω
V 15	6AL5	1Meg	0Ω	0Ω	. 1Ω	1Meg	0Ω	2Meg		
V 16	12AU7	†60KΩ	3Meg	820Ω	. 1Ω	. 1Ω	†60KΩ	360KΩ	820Ω	0Ω
V 17	6CD6G	INF	0Ω	0Ω	INF	470KΩ	INF	. 1Ω	†13KΩ	Top Cap ▲17Ω
V 18	6AU4GT	INF	▲8. 5Ω	800KΩ	INF	†63Ω	†60Ω	. 1Ω	0Ω	
V 19	1B3GT		PINS	1 - 8	HAVE	INFINITE	RESISTANCE			Top Cap ▲480Ω
V 20	5U4G	INF	20KΩ	INF	17Ω	INF	18Ω	INF	20KΩ	
V 21	5U4G	INF	20KΩ	INF	17Ω	INF	18Ω	INF	20KΩ	
V 22	24DP4A	0Ω	†1. 5Meg	Pin 6 ▲420KΩ	Pin 10 ▲320KΩ	Pin 11 †200KΩ	Pin 12 1Ω			

† MEASURED FROM PIN 8 OF V21.
▲ MEASURED FROM PIN 3 OF V18.



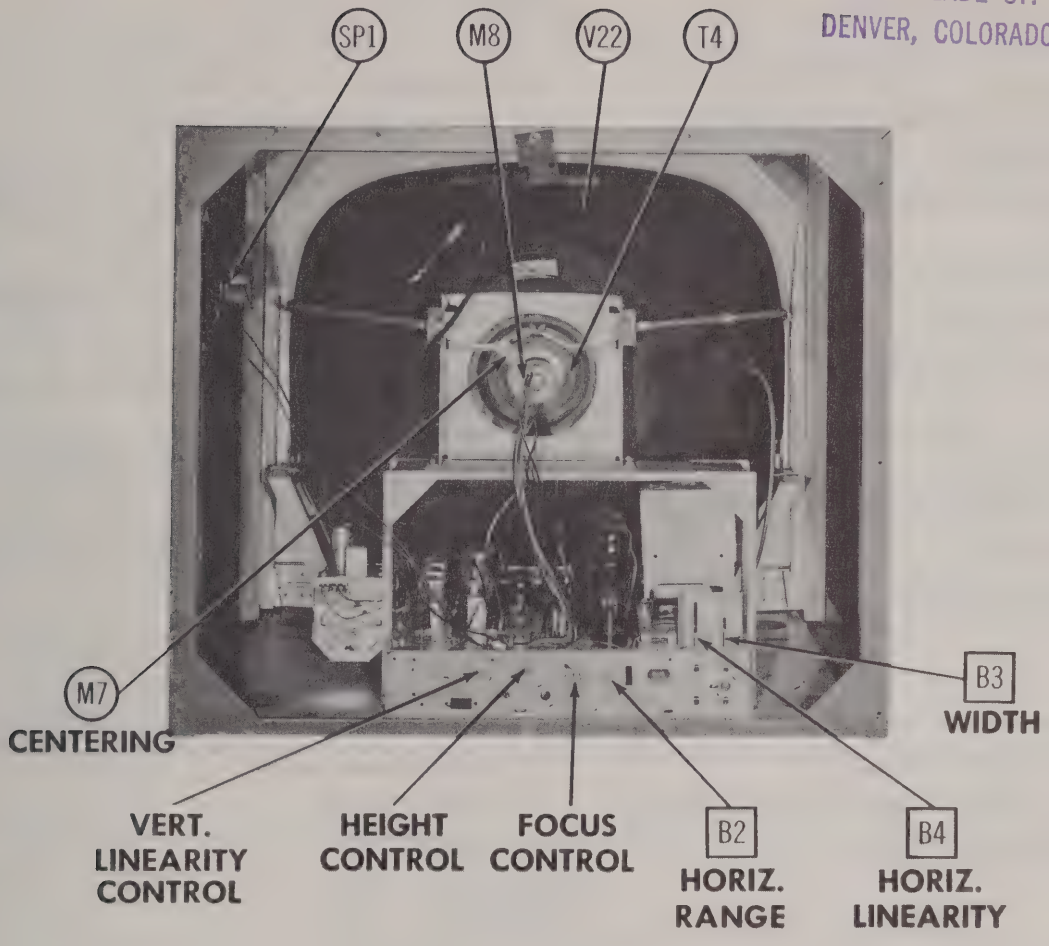
TUBE PLACEMENT CHART



UHF-VHF TUNER PART. NO. V-14130-1 USED ON CHASSIS V.2324-201

ALTERNATE TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal hold control to its mid-range position.
2. Connect a short jumper across horiz. oscillator ringing coil (B1).
3. Connect the DC probe of VTVM to pin 2 of V16. Connect common lead to chassis. Adjust horizontal range trimmer (B2) for zero volts on VTVM. If necessary, readjust horizontal hold control slightly to obtain zero reading on VTVM.
4. Remove jumper from B1 and adjust slug of B1 for zero reading on VTVM. Switch off channel and back again. Picture should pull into sync.

Adjust the horizontal width slug (B3) for a picture that is slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V17, V18, V20 and V21. Check adjustments B2, B3 and B4. Check T2, T4A, C83, R105, R106 and other associated components.

DRIVE LINES

Check by substitution V17 and V18. Check adjustments B2 and B4. Check C81, C83, R101, R105, R106 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V16, V17 and V18. Check C78 for open. Check L26, C77, C80 and other associated components.

XMAS TREE EFFECT

Check by substitution V16, V17 and V18. Check T2 and T4 for internal arcing. Check L26, C80, C74, C75, R98, R97 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R108, R85, C2B and other associated components.	Check C67, C66, C70, C2D, R80, R79, R8, R77 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V13 and V14. Check height and vertical linearity controls for proper operation. Check T3, T4B, R80, R79 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check R108, R80, R79, R8, C70 and other associated components.

COMPRESSED AT TOP

Check by substitution V13 and V14. Check R84, R6, C70, C2C, T3 and other associated components.

FOLDS

Check by substitution V13 and V14. Check C68, C66, R87, R86, T3 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V11 and V12. Check C63, C62, C64, R62, R65, R70, R71 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V13. Check vertical integrator network. Check R77, R78, R3, C66, C67 and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check C72, C80, C81, L26, R99, R2 and other associated components.

HORIZONTAL BENDING

Check by substitution V7, V11, V12, V15 and V16. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check R42, R43, L18, L19, L17, C41 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A11. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video crystal detector network. Check L14, L17, R43, R41, C41 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check video crystal network. Check L17, R41, R43, C41 and other associated components.

SMEAR

Substitute V6. Check L13, L14, L17, R43, R41, C41 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9 and V10. Check stage V10 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C54, C55, C56, C58, R55, R61, R60 and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments R5, and A12. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V20 and V21. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V20 and V21. Check B+ filter and decoupling network.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6BZ7	6BZ7	9AJ	
V2	Mixer-Osc.	6U8	6U8	9AE	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying	6AU6	6AU6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Audio Det.	6BN6	6BN6	7DF	
V10	Audio Output	6BK5	6BK5	9BQ	
V11	Sync Limiter-Sync Amp.	12AT7	12AT7	9A	
V12	Sync Sep.-Noise Limiter	6AN8	6AN8	9DA	
V13	Vert. Mult.	12AU7	12AU7	9A	
V14	Vert. Output	12B4	12B4	9AG	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult.	12AU7	12AU7	9A	
V17	Horiz. Output	6CD6G	6CD6G	5BT	
V18	Damper	6AU4GT	6AU4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	
V21	LV Rectifier	5U4G	5U4G	5T	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	Westinghouse PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V22	24DP4A ① 24DP4	24DP4A ①		24DP4A ① 24DP4	24DP4A ① 24DP4	12L 12L	① Aluminized

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Westinghouse PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲40	450	V-9891-1			FP428.4	TM-4030	Q-325	
B	■40	450							
C	▲30	350							
D	30	350							
C2A	30	50	V-11535-1			FP366.5	TM-4115		
B	▲30	500				TC84			
C	▲150	50							
D	■10	450							
C3	10	450	V-10293-1			TC72	TD-10-450	MT-4510	
C4	3-9			829-10					
C5	1000		V-8662	DD-102	801-001	DC-521			
C6	3		V-8659	TCZ-3	NP0A-030	ZT-553			
C7	800								
C8	.5-3			829-3	3115-01-0R5	CT565A			
C9	47		V-8661	D6-470	831-470	UC-5447			
C10	1.5		V-8749	TCZ-1.5	NP0A-1R5	ZT-5515			
C11	800								
C12	47		V-8755						
C13	.5-3			829-3	3115-01-0R5	CT565A			
C14	5		V-8756						
C15	10		V-8746						
C16	.5-3			829-3	3115-01-0R5	CT565A			
C17	220		V-8748	DD-221	811-221	UC-5322			
C18	75		V-8747						
C19	1000		V-8662	DD-102	801-001	DC-521			
C20	800								
C21	800								
C22	.05	400	RCP10W4503M	DF-503		PT415	IMP4-S5	330415	
C23	.02	600	RCP10M6203M	DF-203	817-02	PT612	IMP6-S2	330612	
C24	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525			
C25	2.2		V-8963-2296	TCZ-2.2	NP0A-2R2				
C26	68		R1CC20SL680K	D6-680	GP1K-680	UC-5468			
C27	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C28	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C29	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C30	2.2		V-8963-2298	TCZ-2.2	NP0A-2R2				
C31	47		R1CC20S2L470K	D6-470	GP1K-470	UC-5447			
C32	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C33	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C34	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525			
C35	.47		V-8963-4788	TCZ-.5	NP0A-R47				Note 1
C36	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C37	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C38	800		R2CC61Z5Z801P	DD-801	801-001	DC-521			
C39	56	500	RCM20B560K	TCZ-56	NP0L-560			KR-1456	
C40	.02	600	RCP10M6203M	DF-203	817-02	PT612	IMP6-S2	330612	
C41	.1	400	RCP10M4104M	DF-104		PT401	IMP4-P1	330401	
C42	.25	400	RCP10W4254M			PT4025	IMP4-P25	3304025	Note 1
C43	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525		C-1250	
C44	.25	400	RCP10W4254M			PT4025	IMP4-P25	3304025	
C45	.1	400	RCP10W4104M	DF-104		PT401	IMP4-P1	330401	
C46	4.7		V-9926-3	TCZ-5	NP0A-4R7	ZT-555		KR-1550	
C47	150	500	RCM20B151K	TCZ-150	NP0-334-151	MCB236		KR-1350	
C48A	5000		V-9044-1	DD2-502	811-005	DC-525		C-1250	
B	5000				811-005	DC-525		C-1250	
C49	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525		C-1250	
C50	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525		C-1250	
C51	47	500	RCM20B470K	TCZ-47	NP0K-470	MCB225		KR-1447	
C52	47		R1CC62R2G470K	D6-470	GP1K-470	UC-5447		K-1447	
C53A	5000		V-9044-1	DD2-502	811-005	DC-525		C-1250	
B	5000				811-005	DC-525		C-1250	
C54	1500		R2CC62Y5Y152M	DD-152	801-0015	DC-5215		C-1215	
C55	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525		C-1250	
C56	.02	600	RCP10M6203M	DF-203	817-02	PT612	IMP6-S2	330612	
C57	.01	600	RCP10M6103M	D6-103	GP2-333-103	PT611	IMP6-S1	330611	
C58	.005	600	RCP10M6502M	D6-502	GP2-333-502	PT625	IMP6-D5	330625	
C59	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525		C-1250	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA Westinghouse PART No.	CENTRALAB PART No.	ERIE MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	NOTES
C80	.1	400	RCP10W4104M	DF-104		PT401	IMP4-P1	330401
C81	270	500	RCM20B271K	DM-271	GP2K-271	UC-5257		K-1227
C82	270	500	RCM20B271K	DM-271	GP2K-271	UC-5257		K-1227
C83	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT611	IMP6-S1	330611
C84	.1	400	RCP10W4104M	DF-104		PT401	IMP4-P1	330401
C85A	1000		eV-11183-1	eSC-101	511-051	DC-533		
B	2000				801-002	DC-523		
C	5000				811-005	DC-535		
D	5000				811-006	DC-525		
C86	.01	400	RCP10M6103K	D6-103	GP3-333-103	PT411	IMP4-S1	330411
C87	.05	600	RCP10W6503M	DF-503		PT415	IMP4-S5	330415
C88	.15	600				PT0015	IMP6-P15	330615 Note 3
C89	.1	400	RCP10W4104M	DF-104		PT401	IMP4-P1	330401
C90	.1	600	RCP10M6104M	DF-104		PT601	IMP6-P1	330601
C91	5000		RSC0E2Z502Z	DD-502	811-005	DC-535	C-1350	
C92	150	500	RCM20B151K	TCZ-150	MPO-334-151	MC3236	KH-1315	
C93	680	500	RCM20B681K				KH-1319	
C94	100	500	RCM20B101K	TCZ-100	MPO-337-101	MC3235	KH-1310	
C95	390	500	RCM20B391K			MC3243	KH-1319	
C96	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT611	IMP6-S1	330611
C97	.005	600	RCP10M6503M	D6-503	GP3-333-503	PT615	IMP6-S5	330615
C98	.01	400	RCP10M6103M	D6-103	GP3-333-103	PT411	IMP4-S1	330411
C99	.1	400	RCP10W4104M	DF-104		PT401	IMP4-P1	330401
C100	3900	500	RCM30C392K			CM-20A39		CM-1339
C81	82	500	RCM20B820K	TCZ-82	MPO-337-820	MC3229		KH-1462
C82	390	500	RCM20B391K			MC3243		KH-1319
C83	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT611	IMP6-S1	330611
C84	.1	400	RCP10M6104M	DF-104		PT401	IMP4-P1	330401
C85	.05	400	RCP10M4503M	DF-503		PT415	IMP4-S5	330415
C86	.05	400	RCP10M4503M	DF-503		PT415	IMP4-S5	330415
C87	.25	400	RCP10M6254M			PT4025	IMP4-P25	330425
C88	65	3000	V-10710-9					
C89	65	3000	V-10710-9					
C90	65	3000	V-10710-9					Note 3
C91	.01	600	V-5040-15	D6-103	GP3-333-103	PT601	IMP6-S1	PC-5611

Note 1. Not used in some versions.
Note 2. Some versions use .05MFD in this application. (part #RCP10W4503K).
Note 3. Some versions use 95MMF in this application. (part #V-10710-10).
* Items C85A, C85B, C85C, C86D, R78A, R78B, R79C, and R78D are combined in one unit.

CONTROLS

ITEM No.	RATING RESIST-ANCE	WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	V-9877-10	*QJ-614	RTV-2LT	F1-7	UF153R	Picture - Panel
B	500KΩ	½				RS-47	UR55-754	Volume tapped at 60KΩ - Rear
C	Switch					ES-1	US-26	Attach to R1B
R2A	60KΩ	½	V-11538D-3	Q11-125	A47-75K-B	AB-35	U-35	Horiz. Hold
B	8Shaft		Not Req.	Not Req.	KS8-3	AK-6	Not Req.	Attach to R2A
R3A	75KΩ	½	V-11539-2	Q11-150	A47-750K-B	AB-59	U-54	Vert. Hold
B	8Shaft		Not Req.	Not Req.	KS8-3	AK-6	Not Req.	Attach to R3A
R4A	100KΩ	½	V-11536-2	Q11-123	A47-100K-B	AB-40	U-42	Brightness
B	6Shaft		Not Req.	Not Req.	KS6-3	AK-6	Not Req.	Attach to R4A
R6	500Ω	1	V-11345-2					Quieting (Wire wound)
R6A	1500Ω	2	V-11782-1	WK-1500	A43-1500	VK-130	RL500L	Vert. Linearity (Carbon)
B	8Shaft		Not Req.	Not Req.	FK3-1/4	Not Req.	Not Req.	Attach to R6A
R7A	750KΩ	½	V-12272-1	Q11-136	A47-1Meg-B	BX-89	U-54	AGC
B	8Shaft		Not Req.	FQ	FK2-1/4	Not Req.	Not Req.	Attach to R7A
R8A	250KΩ	½	V-13709-2	Q11-130	A47-250K-B	AB-50	U-46	Height
B	8Shaft		Not Req.	Not Req.	FK2-1/4	Not Req.	Not Req.	Attach to R8A
R9A	2Meg	½	V-13709-3	Q11-139	A47-2Meg-B	BX-75	U-56	Focus
B	8Shaft		Not Req.	Not Req.	FK2-1/4	Not Req.	Not Req.	Attach to R9A

* CONCENTRIKIT EQUIVALENT: KT K-3, BABE ELEMENTS & SHAFTS: R17-109 & P1-123 (PANEL) to R16-153X & R2-213 (REAR)
76-1 SWITCH

† Universal replacement (Mallory exact duplicate part no. UE174S)

RESISTORS

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R10	47KΩ	½	RC20A473K	BTS-47K	
R11	22KΩ	½	RC20A223K	BTS-22K	
R12	820KΩ	½		BTS-820K	
R13	1500Ω	1		BTA-1500	
R14	470KΩ	½		BTS-470K	
R15	6800Ω	½	RC20A682K	BTS-6800	
R16	100KΩ	½	RC20A104K	BTS-100K	
R17	100KΩ	½	RC20A104K	BTS-100K	
R18	15KΩ	½	RC20A153K	BTS-15K	
R19	100KΩ	½	RC20A103K	BTS-100K	
R20	10KΩ	½	RC20A103K	BTS-10K	
R21	330KΩ	½	RC20A334K	BTS-330K	
R22	18Meg 5%	½	RC30A185J	BTS-18Meg 5%	
R23	1.5Meg 5%	½	RC30A155J	BTS-1.5Meg 5%	
R24	390KΩ	½	RC20A394K	BTS-390K	
R25	10KΩ	½	V-8927-10	BTS-10K	Note 7
R26	10Ω	½	RC20A100K	BTS-10	Note 3
R27	68Ω	½	RC20A680K	BTS-68	
R28	470Ω	½	RC20A471M	BTS-470	
R29	100KΩ 5%	½	RC20A104J	BTS-100K 5%	
R30	10KΩ	½	RC20A103M	BTS-10K	
R31	4700Ω 5%	½	V-8927-2	BTS-4700 5%	
R32	68Ω	½	RC20A680K	BTS-68	
R33	470Ω	½	RC20A471M	BTS-470	
R34	4700Ω 5%	½	V-8927-3	BTS-4700 5%	
R35	150Ω	½	RC20AE151K	BTS-150	
R36	470Ω	½	RC20AE471M	BTS-470	
R37	330Ω	½	RC20AE331K	BTS-330	
R38	13KΩ	½	RC20AE123K	BTS-13K	
R39	3300Ω	½	RC20AE332K	BTS-3300	
R40	100	½	RC20AE101K	BTS-10	
R41	22KΩ	½	RC20AE223K	BTS-22K	
R42	3900Ω	5	V-5924-3	PWV-3900	
R43	330KΩ	½	RC20AE334K	BTS-330K	
R44	330KΩ	½	RC20AE334K	BTS-330K	
R45	100KΩ	½	RC20AE104K	BTS-100K	
R46	1.5Meg	½	RC20AE155K	BTS-1.5Meg	
R47A	1000	6			Note 6
B	1000	6	V-14556-2		Note 6
C	5000	2			Note 6
R48	4700Ω	1	RC20AE472K	BTS-4700	
R49	18KΩ	2	RC40AE183K	BTS-18K	
R50	4700Ω	1	RC30AE472K	BTA-4700	
R51	120Ω	2	RC40AE121K	BTS-120	
R52	1200Ω	2	RC20AE122K	BTS-1200	
R53	27KΩ	2	RC40AE273K	BTS-27K	
R54	470Ω	2	RC20AE471K	BTS-470	
R55	330KΩ	1	RC30AE334K	BTS-330K	
R56	12KΩ	6	RC20AE123K	BTS-12K	
R57	10KΩ	1	RC20AE103M	BTS-10K	
R58	150Ω	2	RC20AE151M	BTS-150	
R59	180Ω	2	RC20AE181K	BTS-180	
R60	1000Ω	2	RC20AE102K	BTS-1000	
R61	560Ω	2	RC40AE561K	BTS-560	
R62	330KΩ	2	RC40AE334K	BTS-330K	
R63	330KΩ	2	RC20AE334K	BTS-E20K	
R64	270KΩ	2	RC20AE274K	BTS-270K	
R65	8200Ω	2	RC20AE822K	BTS-8200	

RESISTORS (cont)

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R68	1Meg	½	RC20AE105K	BTS-1Meg	
R67	470KΩ	½	RC20AE474K	BTS 470K	
R68	470KΩ	½	RC20AE474K	BTS-470K	
R69	120Ω	½	RC20AE122K	BTS-1200	
R70	220KΩ	½	RC20AE224K	BTS-220K	
R71	47KΩ	½	RC20AE473K	BTS 47K	
R72	150KΩ	½	RC20AE154K	BTS-150K	
R73	27KΩ	½	RC20AE273K	BTS 27K	
R74	3900Ω	½	RC20AE392K	BTS 3900	
R75A	22KΩ			(BTS-22K	
B	22KΩ		eV-11192-1	BTS-22K	
C	8200Ω			BTS-8200	
D	8200Ω			BTS-8200	
R76	68KΩ	½	RC20AE683K	BTS-68K	Note 1
R77	100KΩ	½	RC30AE104K	BTA-100K	
R78	680KΩ	½	RC20AE684K	BTS-680K	
R79	100KΩ	½	RC20AE104K	BTS-100K	Note 2
R80	8200Ω			BTS-8200	Note 2
R81	220KΩ			BTS-220K	Note 2
R82	2.2Meg	½	RC20AE225K	BTS-2.2Meg	
R83	1500Ω	½	RC30AE152K	BTS-1500	Note 2
R84	470Ω	2	RC40AE471M	BTS-470	
R85	560Ω	2	RC40AE561K	BTS-560	
R86	1800Ω	½	RC30AE182K	BTS-1800	Note 4
R87	2200Ω	½	RC20AE222K	BTS-2200	Note 5
R88	560Ω	2	RC20AE561K	BTS-560	
R89	560Ω	2	RC20AE561K	BTS-560	
R90	1Meg	½	RC20AE105K	BTS-1Meg	
R91	1Meg	½	RC2uAE105K	BTS-1Meg	
R92	47KΩ	½	RC20AE473K	BTS-47K	
R93	220KΩ	½	RC20AE224K	BTS-220K	
R94	470KΩ	½	RC20AE474K	BTS-470K	
R95	47KΩ	½	RC20AE473K	BTS-47K	
R96	820Ω	½	RC20AE821K	BTS-821	
R97	100Ω	½	RC30AE563K	BTA-563K	
R98	1000Ω	½	RC20AE102K	BTS-1000	
R99	270KΩ 5%	½	RC20AE274J	BTS-270K 5%	
R100	56KΩ	½	RC30AE563K	BTS-563	
R101	5600Ω	2	RC20AE562K	BTS-5600	
R102	470KΩ	½	RC20AE474K	BTS-470K	
R103	150Ω	½	RC20AE151M	BTS 150	
R104	150Ω	1	RC20AE151M	BTS-150	
R105	27KΩ	2	RC40AE273M	BTS-27K	
R106	22KΩ	2	RC40AE223K	BTS-22K	
R107	100KΩ	½	RC20AE103K	BTS-1000	
R108	270KΩ	½	RC20AE274K	BTS-270K	
R109	470KΩ	½	RC30AE474K	BTS-470K	
R110	100KΩ	1	V-9927-12	BTA-100K	
R111	100KΩ	1	V-9927-12	BTA-100K	

* Items R75A, R75B, R75C, R75D, C85A, C85B, C85C and C85D are combined in one unit.
Note 1: Some versions may use a 12000 resistor in this application.
Note 2: Not used in some versions.
Note 3: Some versions may use a 39KΩ resistor in this application.
Note 4: Some versions may use a 82000 resistor in this application.
Note 5: Some versions may use a 39000 resistor in this application.
Note 6: Late production, a two section 2000 resistor part no. V-10054-8, first section 8000 6 watts, second section 14000 8 watts.
Note 7: Some versions use a 6800Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No	RATING PRI	SEC. 1	SEC. 2	REPLACEMENT DATA Westinghouse PART No	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No	Holldorson PART No.	Thordarson PART No
T1	117VAC @ 3.03A	508VCT @ .330A	5VAC @ 6A	V-12605-4C						
	SEC. 3	SEC. 4	SEC. 5							
	12.6VCT @ 5.8V									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA Westinghouse PART No	Holldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	V-14527-1	FB419 & RF600Ω①		2357I & 2148R1①	X984 & 20JR14*①		FLY-16 & WC-20* ①	D-50 & WC-11* ①
T3	Vert. Output Trans.	V-14609-1				V302 ②	A-8142 ②	26S72 ② WC-16 ②	A-108X ②
T4A	Yoke (90°) Horiz.(21MH)	V-14602-1④	DF601③						
B	Vert.(39MH)		④						
T5	Horiz. Lin. Coil (3-9MH)	V-14601-1	RF600Ω⑦②	MWC-6⑦	21SR1⑦	20IR15⑦	WC-8⑦	WC-18⑦	WC-12⑦②
T6	Width Coil (5-6.5MH)	V-14603-1		MWC-6⑦	21JR1⑦	20IR8A⑦	WC-8⑦	WC-17⑦	WC 13⑦

① Drill new mounting hole(s).
② Connect as auto trans.
③ Mount on top of chassis.
④ Includes capacitors C88, C89 and C90. Resistors R58, R68 and R109.
⑤ Use original horiz. yoke & dag network.
⑥ Use original yoke cover and positioning device.
⑦ Drill new mounting hole or use original mounting bracket, slider and core.
⑧ Connect to terms #3 and #4.
⑨ Connect to coded blue and red terms.
⑩ Do not tap.
⑪ Connect to coded blue and green terms.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Holldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
Horiz. L. plate lead	9	9	9	9	9	9	9
4	7	7	7	7	7	7	7
3	5	5	5	5	5	5	5
6	3	3	3	3	3	3	3
7	1						
5	RF600 Term #4		21AR1 Term 'D' winding	20UR14 outer winding		WC-20 Term #1 WC-20 Term #2	WC-11 orange term WC-11
8	Term #4		Term 'E'	20UR14 outer winding		Term #2	black term
Connect Width Coil Across	RF600 terms #6 & #2 across 3 & 1		21AR1 terms 'A' & 'B' across 3 & 1	20UR14 inner winding across 3 & 1		WC-20 terms #2 & #4 across 3 & 1	WC-11 terms red & blue across 3 & 1
Special Notes →	⑫		⑫	⑫		⑫	⑫

⑫ If AGC does not function properly, reverse width coil primary or secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	SEC	REPLACEMENT DATA Westinghouse PART No	Stancor PART No	Merit PART No	Triad PART No	Holldorson PART No	Thordarson PART No	NOTES
T7	7KΩ	3.3Ω	V-14080-3	A-3878 ①	A-2931 ①	S-7X ①	Z1U3 ①	26S49 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V C IMP	REPLACEMENT DATA Westinghouse PART No	VIKING PART No	QUAM PART No	NOTES
SP1	5 1/4	PM	3.5Ω	V-12127-1	52526	52A1	① Used in models H-853K24, H-853KU24, H-854K24, H-854KU24, H-878K24, H-878KU24, H-879K24, H-879KU24, H-881K24 and H-881KU24
	10"	PM	3.5Ω	V-9770-1 ①	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI	SEC	REPLACEMENT DATA Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω	0Ω	V-14176-2				Channel 2, core #V9880
B	Ant. Coil	0Ω	0Ω	V-14176-3				Channel 3, core #V9880
C	Ant.Coil	0Ω	0Ω	V-14176-4				Channel 4, core #V9880
D	Ant.Coil	0Ω	0Ω	V-14176-5				Channel 5, core#V9880
E	Ant. Coil	0Ω	0Ω	V-14176-6				Channel 6, core #V9880
F	Ant. Coil	0Ω	0Ω	V-14176-7				Channel 7
G	Ant. Coil	0Ω	0Ω	V-14176-8				Channel 8
H	Ant. Coil	0Ω	0Ω	V-14176-9				Channel 9
I	Ant. Coil	0Ω	0Ω	V-14176-10				Channel 10
J	Ant.Coil	0Ω	0Ω	V-14176-11				Channel 11
K	Ant. Coil	0Ω	0Ω	V-14176-13				Channel 13
L	Ant. Coil	0Ω	0Ω	V-14176-13				Channel 13
L2	Mxr. Coil	0Ω						
L3A	RF, Mixer Grid & Coil	0Ω		V-14177-2				Channel 2, core #V9880-1
B	RF, Mixer Grid & Coil	0Ω		V-14177-3				Channel 3, core #V9880-1
C	RF, Mixer Grid & Coil	0Ω		V-14177-4				Channel 4, core #V9880-1
D	RF, Mixer Grid & Coil	0Ω		V-14177-5				Channel 5, core #V9880-1
E	RF, Mixer Grid & Coil	0Ω		V-14177-6				Channel 6, core #V9880-1
F	RF, Mixer Grid & Coil	0Ω		V-14177-7				Channel 7, core #V9880-1
G	RF, Mixer Grid & Coil	0Ω		V-14177-8				Channel 8, core #V9880-1
H	RF, Mixer Grid & Coil	0Ω		V-14177-9				Channel 9, core #V9880-1
I	RF, Mixer Grid & Coil	0Ω		V-14177-10				Channel 10, core #V9880-1
J	RF, Mixer Grid & Coil	0Ω		V-14177-11				Channel 11, core #V9880-1
K	RF, Mixer Grid & Coil	0Ω		V-14177-12				Channel 12,core #V9880-1
L	RF, Mixer Grid & Coil	0Ω		V-14177-13				Channel 13, core #V9880-1
L4	Conv. Plate	.1Ω		V-9781				
L5	1st. Video IF	0Ω		V-9682-8	17-4534 *		6319 *	
L6	41.25MC Trap	0Ω		V-11973-1	20-1047			
L7	Fil. Choke	0Ω		V-4686-2	19-1000	TV-189	4603	1.1 Microhenries
L8	2nd. Video IF	.5Ω	.6Ω	V-9678-1	17-4531 *		6321	
L9	Fil. Choke	0Ω		V-4686-2	19-1000	TV-189	4603	1.1 Microhenries
L10	47.25MC Trap	0Ω		V-11973-1				
L11	3rd. Video IF	.5Ω	.6Ω	V-9678-1	17-4531 *		6321	
L13	4th. Video IF	.5Ω		V-12138-1				Includes caps., M3, series peaking coil
L13	Series Peaking Coil	4.6Ω		V-9803-8	19-3125		6153	125 Microhenries
L14	Shunt Peaking Coil	1.3Ω		V-4686-1	19-1005	TV-189	4634	14 Microhenries
L15	Fil. Choke	0Ω		V-4686-3	19-1000	TV-189	4603	1.1 Microhenries
L16	1st. Video IF	1.1Ω		V-9682-9	20-1004	TV-191	1669	
L17	Series Peaking Coil	9.8Ω		V-9815-7	19-3180	TV-184	6180	170 Microhenries
L18	Shunt Peaking Coil	8Ω		V-9815-8	19-3300	TV-185	6184	390 Microhenries
L19	Series Peaking Coil	1.5Ω		V-4686-1	19-1005	TV-189	4634	14 Microhenries
L20	1st. Sound IF	1.5Ω		V-9683-5	17-3400	TV-191	1670	
L21	2nd. Sound IF	1.2Ω		V-9683-2	17-3400	TV-191	1670	
L22	RF Choke	8.5Ω		V-9815-2	19-3300		6648	390 Microhenries
L23	Fil. Choke	0Ω		V-4686-3	19-1000	TV-189	4603	1.1 Microhenries
L24	Quadrature Coil	6.5Ω		V-13596-1	17-1031		1670-A	
L25	Fil. Choke	0Ω		V-4686-3	19-1000	TV-189	4603	1.1 Microhenries
L26	Horiz. Osc.	TTΩ		V-9764	19-1876	TV-163	6310	
L27	RF Choke	3Ω		V-9099-3	19-1003		4606	3.3 Microhenries, IRC part #C1.A

* Use one winding only.
† Deluxe trap.
‡ Drill mounting holes.

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-877U24, H-878K24, H-878KU24, H-879K24, H-879KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Westinghouse PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L28	.320A	41Ω	1.15HY	V-12170-1	C-2326①	C-2996 ①	C-17X ①	C5037 ①	26C44 ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Westinghouse PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3/8A 250V	V-6171-10		312.375 (3AG 3/8A)	357001	AGC 3/8	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Westinghouse PART No.	SYLVANIA PART No.		
M2	1N64	V-10916-1	1N60 or 1N132		Video Det.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M3	Dial Light		#55, Bayonet; Used in chassis V-2315-25 and V-2324-201 only.
M4	Tuner	V-14170-2 (Code 305)	VHF - Chassis V-2314-15, V-2314-25 - Note 1
M5	Tuner	V-14130-1	VHF-UHF combination - Chassis V2324-201 - Note 2
M6	Trap	V-8751	VHF Ant. Input Filter - Trap part #V-8782 used with VHF tuner part no. V-14170-2 (Code 294)
M7	Centering Magnet		Part of yoke cover (T4)
M8	Ion Trap	V-9784-5	
B2	Trimmer Cap.	V-11228-2	Horiz. Range (5-80MMF)
	Cabinet	V-1380-1	Models H-875T24 and H-875TU24
	Cabinet	V-1380-2	Models H-876T24 and H-876TU24
	Cabinet	V-1380-3	Models H-877T24 and H-877TU24
	Cabinet	V-1352-12	Model H-875T24A
	Cabinet	V-1368-2	Models H-881K24 and H-881KU24
	Cabinet	V-1362-1	Models H-869K24 and H-869KU24
	Cabinet	V-1362-2	Models H-870K24 and H-870KU24
	Cabinet	V-1367-1	Models H-878K24 and H-878KU24
	Cabinet	V-1353-10	Models H-853K24 and H-853KU24
	Cabinet	V-1353-11	Models H-854K24 and H-854KU24
	Knob Assembly	V-14229-1	VHF Channel Sel. - Model H-875T24
	Knob Assembly	V-14229-3	VHF Channel Sel. - Models H-876T24, H-877T24, H-853K24, H-854K24, H-869K24, H-881K24 and H-878K24
	Knob Assembly	V-14229-8	VHF Channel Sel. -Model H-870K24
	Knob Assembly	V-14475-3	VHF Channel Sel. -Model H-875T24A
	Knob Assembly	V-14520-1	VHF Channel Sel. -Models H-875TU24, H-876TU24, H-877TU24, H-853KU24, H-854KU24, H-878KU24, H-869KU24, H-870KU24 and H-881KU24
	Knob	V-12930-3	VHF Fine Tuning - Model H-875T24A
	Knob	V-12930-3	VHF Fine Tuning - Model H-875T24 and UHF Tuning, Model H-875TU24
	Knob	V-12930-1	VHF Fine Tuning - Models H-876T24, H-877T24, H-853K24, H-854K24, H-878K24, H-869K24, H-870K24 and H-881K24 and UHF Tuning, Models H-876TU24, H-877TU24, H-853KU24, H-854KU24, H-878KU24, H-869KU24, H-870KU24 and H-881KU24
	Knob	V-14423-2	VHF Fine Tuning - Models H-875TU24, H-876TU24, H-877TU24, H-853KU24, H-854KU24, H-878KU24 and H-870KU24
	Knob	V-14423-1	VHF Fine Tuning - Models H-869KU24 and H-881KU24
	Knob	V-12913-3	On-Off-Volume - Models H-875T24, H-875TU24 and H-875T24A
	Knob	V-12913-2	On-Off-Volume - Models H-877T24, H-877TU24, H-870K24 and H-870KU24
	Knob	V-12913-1	On-Off-Volume - Models H-854K24, H-854KU24, H-853K24, H-853KU24, H-878K24, H-878KU24, H-869K24, H-869KU24, H-881K24, H-881KU24, H-876T24 and H-876TU24
	Knob	V-12914-3	Contrast - Models H-875T24, H-875TU24 and H-875T24A
	Knob	V-12914-1	Contrast - Models H-876T24, H-876TU24, H-877T24, H-877TU24, H-853K24, H-853KU24, H-854K24, H-854KU24, H-878K24, H-878KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-881K24 and H-881KU24
	Knob Assembly	V-14219-1	UHF Dial - VHF-UHF Models
	Safety Glass	V-12368-3	All Models
	Mask	V-13989-3	Includes Window - Models H-875T24 and H-875TU24
	Mask	V-12989-2	Includes Window - Models H-876T24, H-876TU24, H-877T24, H-877TU24, H-881K24, H-881KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-878K24, H-878KU24, H-853K24, H-853KU24, H-854K24, H-854KU24
	Mask	V-12927-2	Model H-875T24A
	Medallion	V-14511-2	"W"

Note 1: Alternate VHF tuner part no. V-14170-2 (Code 294)
Note 2: Separate VHF tuner part no. V-1489-1; separate UHF tuner part no. V-14990-1.

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check M1 fuse. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C86, C85, C84, R106, R105 and other associated components.	Check L26, C80, C3, C81, C83, R100, R98, R97, R96 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V17, V18, V20 and V21. Check adjustments B2, B3, and B4. Check C83, R105, R106 and other associated components.

BLOOMING

Check by substitution V17, V18, V19, V20 and V21. Check R105, R106, R110, C83 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF alignment components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

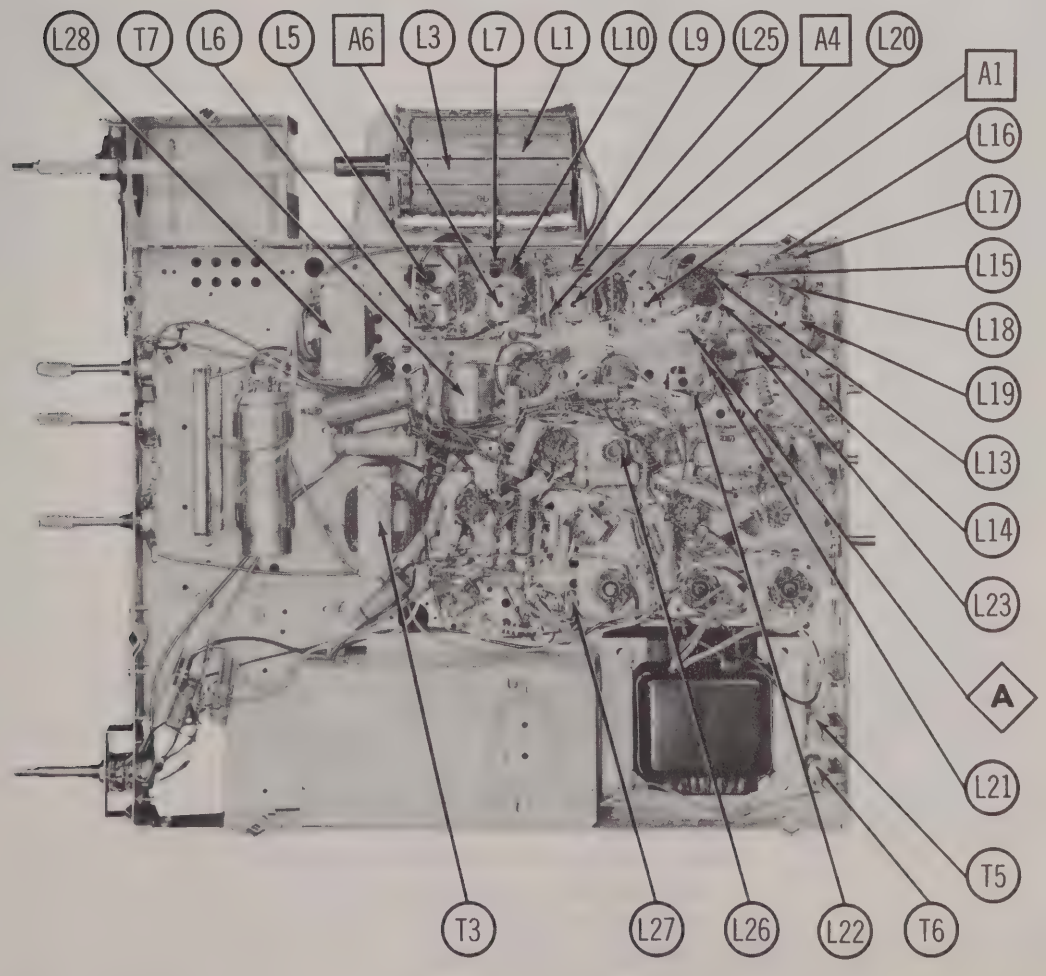
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

WESTINGHOUSE MODELS H-853K24, H-853KU24, H-854K24, H-854KU24, H-869K24, H-869KU24, H-870K24, H-870KU24, H-875T24, A, H-875TU24, H-876T24, H-876TU24, H-877T24, H-877TU24, H-878K24, H-878KU24, H-881K24, H-881KU24 (Ch. V-2314-15, -25, V-2324-201)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet, above and slightly to the left of the Channel Selector shaft.

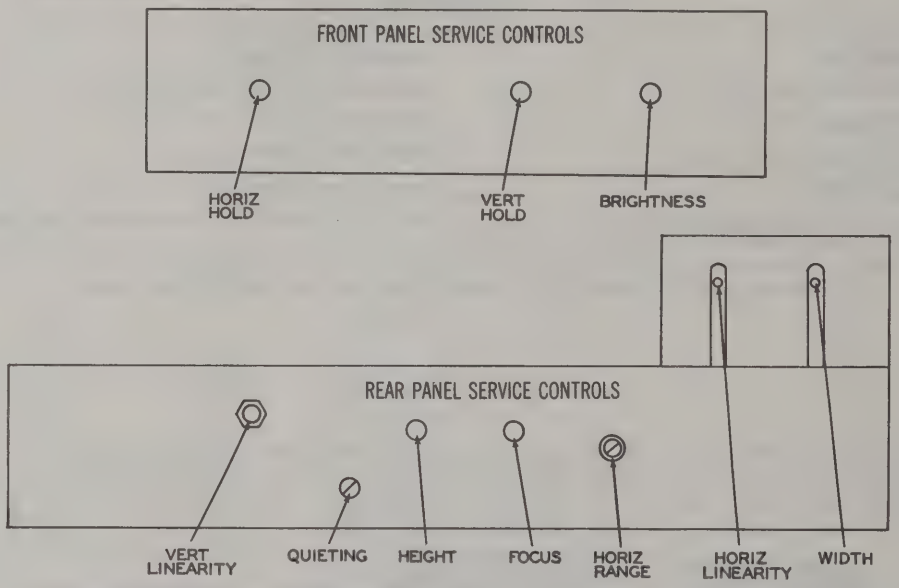
PICTURE TUBE SAFETY GLASS CLEANING

Open front control door and remove 2 screws located inside. Remove door assembly and remove 2 metal screws from each (2) side trim molding. (plastic). Remove trim and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - AGC CONTROL ADJUSTMENT

The AGC control is located on the rear of the chassis and can be adjusted without removing the chassis. With the receiver warmed up, tune to the strongest TV signal available. Rotate the AGC control clockwise until the receiver begins to overload with unstable sync. Rotate control counter clockwise where best picture and stable sync is obtained. On weak signals adjust for minimum snow in picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the Horiz. Hold Control at the center of its range and adjust the Horiz. Osc. slug L26 until picture synchronizes horizontally. (For location see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the quieting control located on rear apron of chassis. If necessary, adjust slightly for minimum noise in receiver output.

FUSES

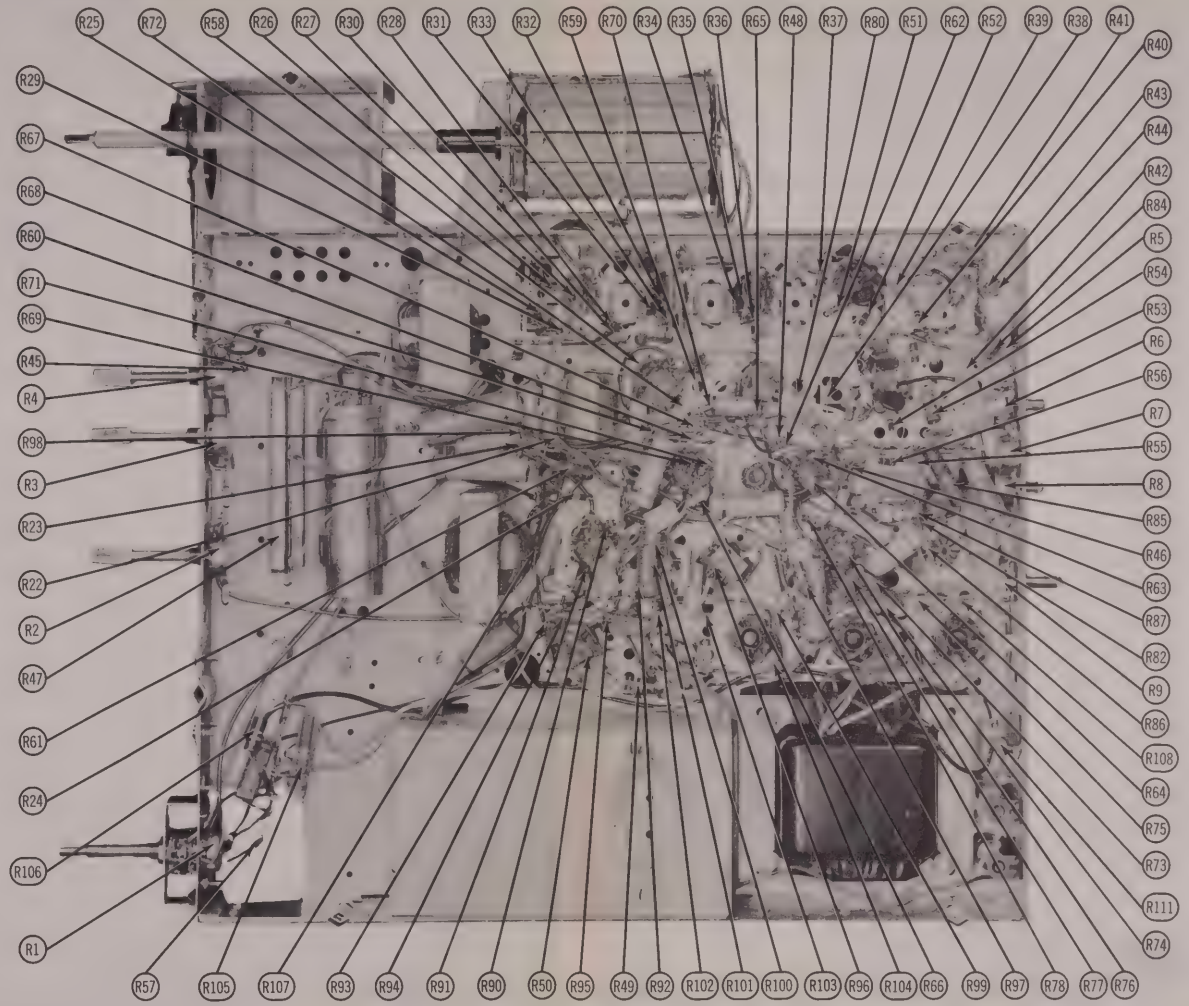
One fuse is used for Horiz. Sweep Circuit protection. (For location see Tube Placement Chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push-on type control knobs from front panel of cabinet.
2. Remove 10 metal screws. Remove rear cover.
3. Disconnect 2 speaker leads.
4. Remove 7 chassis bolts. Remove chassis.
5. Remove 2 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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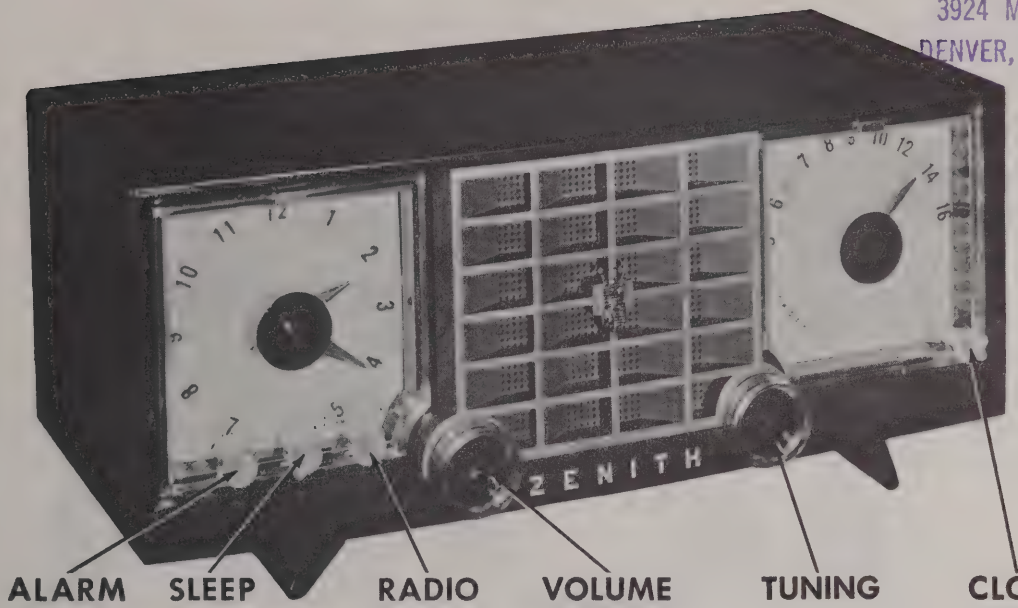

ZENITH MODELS
R623F, G, R, W, Y (Ch. 6R03)

TRADE NAME	Zenith Models R623F, G, R, W, Y (Ch. 6R03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Six)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	Direct	Loop	1600KC	Tune to 1600KC signal	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL R623F (Ch. 6R03)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	6BJ6	6BJ6	7CM	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Output	50C5	50C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	■80	150	22-2351			FP216	TM-8040-150	D-085	
B	▲40	150							
C2	.05	200	22-829	DF-503		PT415	IMP2-S5	330215	
C3	.05	200	22-829	DF-503		PT415	IMP2-S5	330215	
C4	10000		22-3	DD-103	811-01	DC-511			
C5	470		22-6	DD-471	831-471	UC-5347		K-1347	
C6	10000		22-3	DD-103	811-01	DC-511			
C7	.01	400	22-1846	D6-103	GP2-333-103	PT411	IMP4-S1	330411	
C8	10000		22-3	DD-103	811-01	DC-511			
C9	.05	200	22-829	DF-503		PT415	IMP2-S5	330215	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2826	Q13-133	A47-500K-Z	AB-617	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2	3Ω	2	63-3219					Dimmer(wire-wound)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	330Ω	½	63-1765	BTS-330	
R4	15KΩ	½	63-1835	BTS-15K	
R5	1000Ω	½	63-1786	BTS-1000	
R6	22KΩ	½	63-1842	BTS-22K	
R7	68Ω	½	63-1737	BTS-68	
R8	2.2Meg	½	63-1926	BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R9	4.7Meg	½	63-1940	BTS-4.7Meg	
R10	470KΩ	½	63-1898	BTS-470K	
R11	470KΩ	½	63-1898	BTS-470K	
R12	150Ω	½	63-1750	BTS-150	
R13	1000Ω	1	63-956	BTA-1000	
R14	22Ω	1	63-3197		

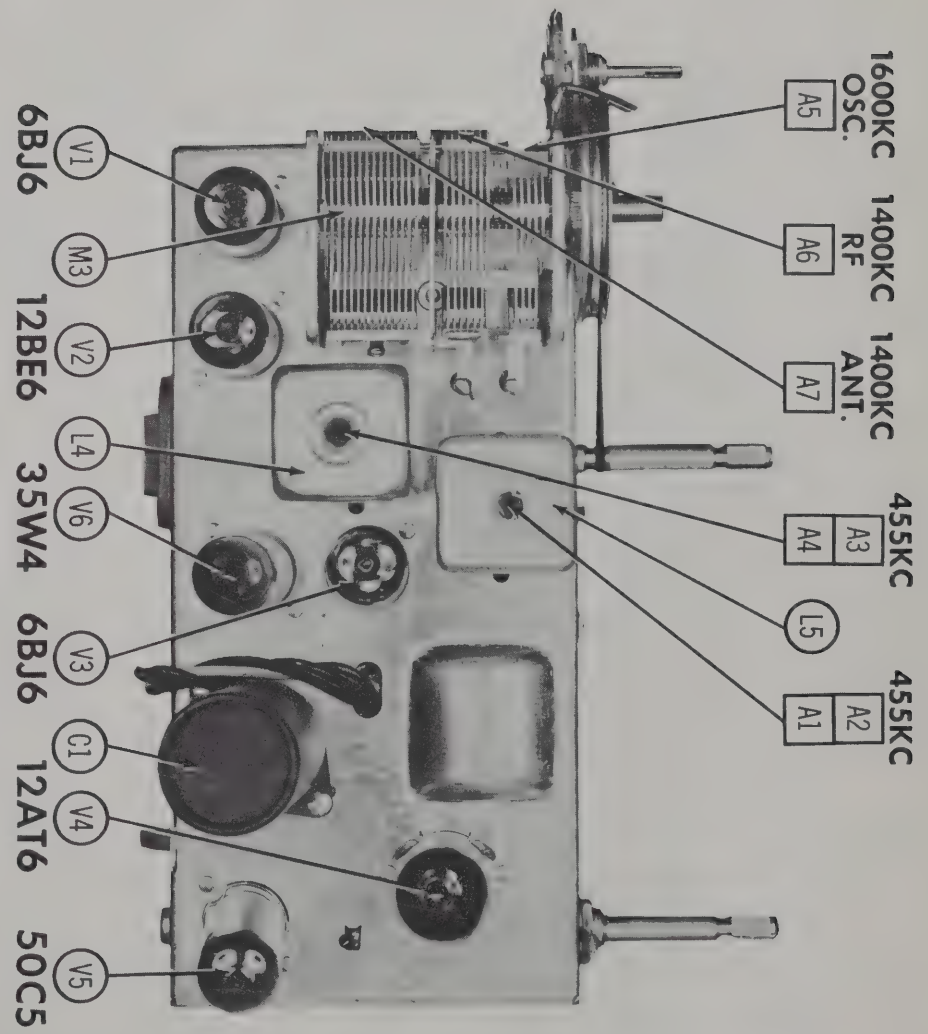
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.34KΩ	3.3Ω	95-1354						

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.3Ω	49-713	ST-113 Mod. P4-X	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

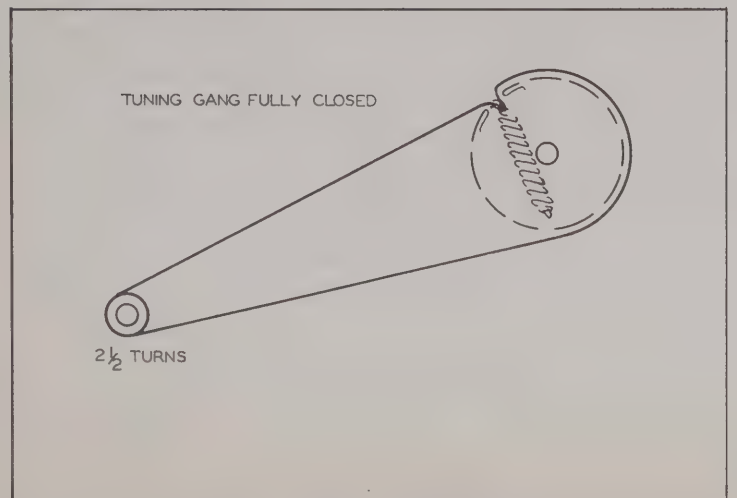
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω						Includes cabinet back
L2	RF Coil	3Ω	10.5Ω	S-18500				Tapped @ 5.5Ω
L3	Osc. Coil	.6Ω	8.5Ω	S-18501				
L4	Input IF	16Ω	16Ω	95-1101	16-6666	BC-368	O12-C1	
L5	Output IF	23Ω	23Ω	95-1102	16-6770 *	BC-355 *	12-C6 *	

* Use adaptor plate and cut out center spade bolt mounting support.

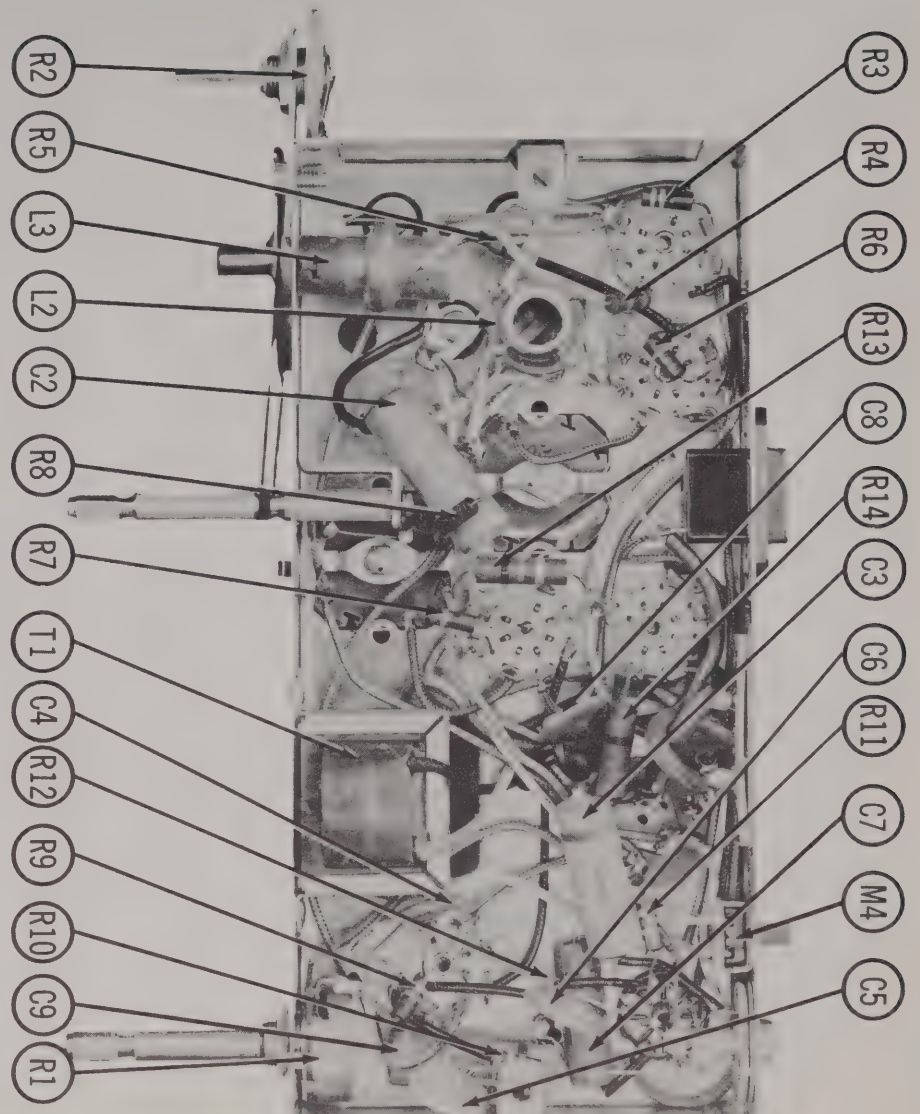
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Dial Light	100-67	#47, Bayonet
M2	Dimmer Light	100-51	#43, Bayonet - Clock Panel
M3	Tuning Cap.	22-2588	3 Gang (25-455MMF, 15-205MMF, 14-85MMF)
M4	Switch	85-495	Radio-Phono (Slide Type DPDT)
M5	Clock Assy.	S-21664	
	Cabinet	14-1716	Model R623R
	Cabinet	14-1717	Model R623Y
	Cabinet	14-1718	Model R6236
	Cabinet	14-1719	Model R623W
	Cabinet	14-1720	Model R623F
	Knob	46-1307	Volume & tuning
	Knob	46-1312	Clock - Alarm, radio & auto off switch
	Knob	46-1312	Clock - alarm set
	Knob	46-1312	Clock - sleep
	Dial Pointer	59-304	Radio
	Dial Scale	26-531	Radio
	Dial Scale	26-532	Clock
	Dial Background	57-2043	Radio
	Dial Crystal	192-193	Clock
	Dial Crystal	192-184	Radio

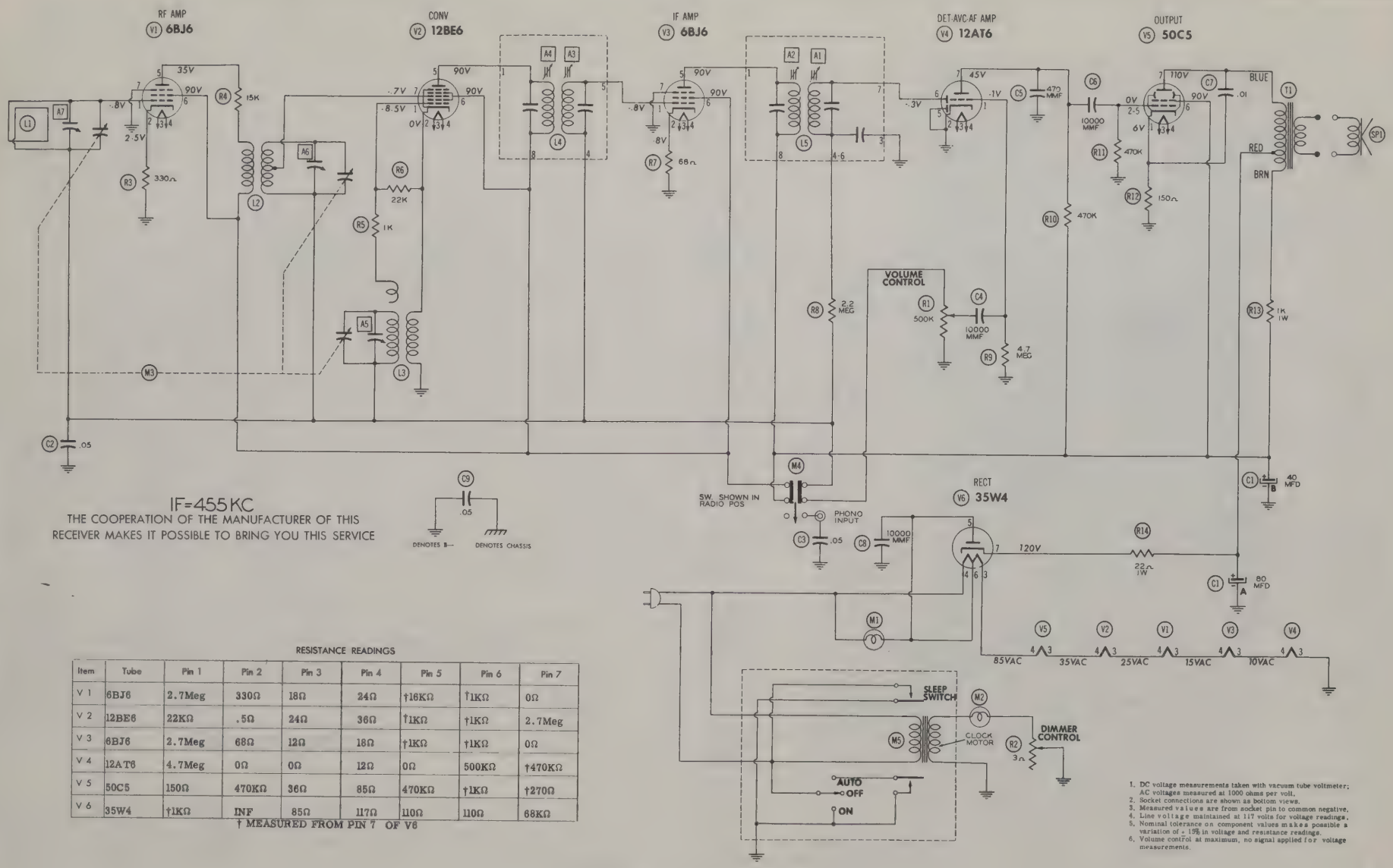


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



ZENITH MODEL R623F (Ch. 6R03)



IF=455KC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	2.7Meg	330Ω	18Ω	24Ω	†16KΩ	†1KΩ	0Ω
V 2	12BE6	22KΩ	.5Ω	24Ω	36Ω	†1KΩ	†1KΩ	2.7Meg
V 3	6BJ6	2.7Meg	68Ω	12Ω	18Ω	†1KΩ	†1KΩ	0Ω
V 4	12AT6	4.7Meg	0Ω	0Ω	12Ω	0Ω	500KΩ	†470KΩ
V 5	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1KΩ	†270Ω
V 6	35W4	†1KΩ	INF	85Ω	117Ω	110Ω	110Ω	68KΩ

† MEASURED FROM PIN 7 OF V6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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ZENITH MODELS R2671E, EU, R, RU, R2975R, RU, R2976E, EU, R2979E, EU (Ch. 22R21, U)

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ZENITH MODEL R2671E

TRADE NAME	ZENITH	MODELS	CHASSIS
		R2671E, R2671R, R2975R, R2976E, R2979E	22R21
		R2671EU, R2671RU, R2975RU, R2976EU, R2979EU	22R21U

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 2.58 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructionss 23
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 15 thru 18
Photographs
Cabinet-Rear View 11
Capacitor Identification 4, 9
Chassis-Top View 3
RF Tuner 10, 21
Resistor Identification 14, 19
Photographs (Cont)
Trans., Inductor & Alignment Identification 20
Resistance Measurements 8
Servicing in the Field 22
Schematic (Alternate Tuner) 13
Schematic (TV) 2
Trouble Shooting Aids 12, 21
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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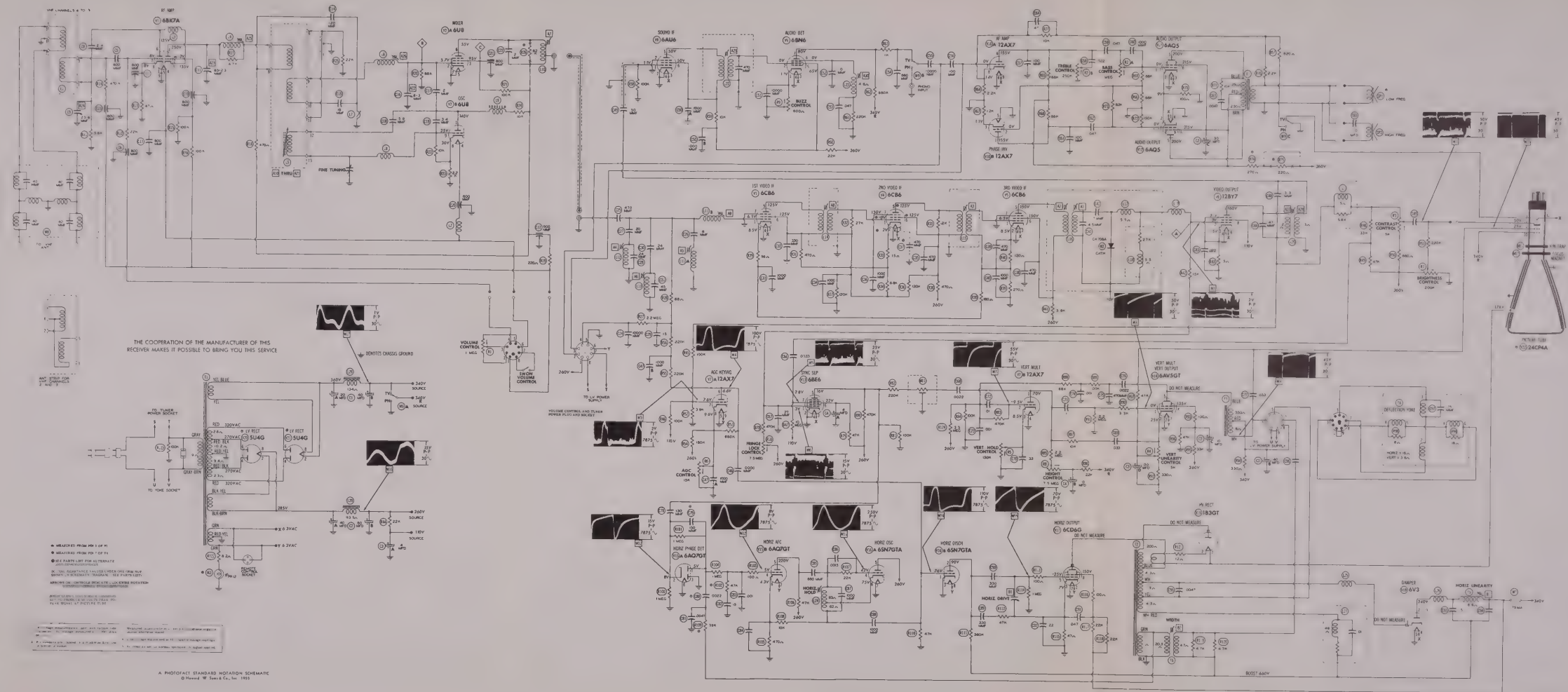
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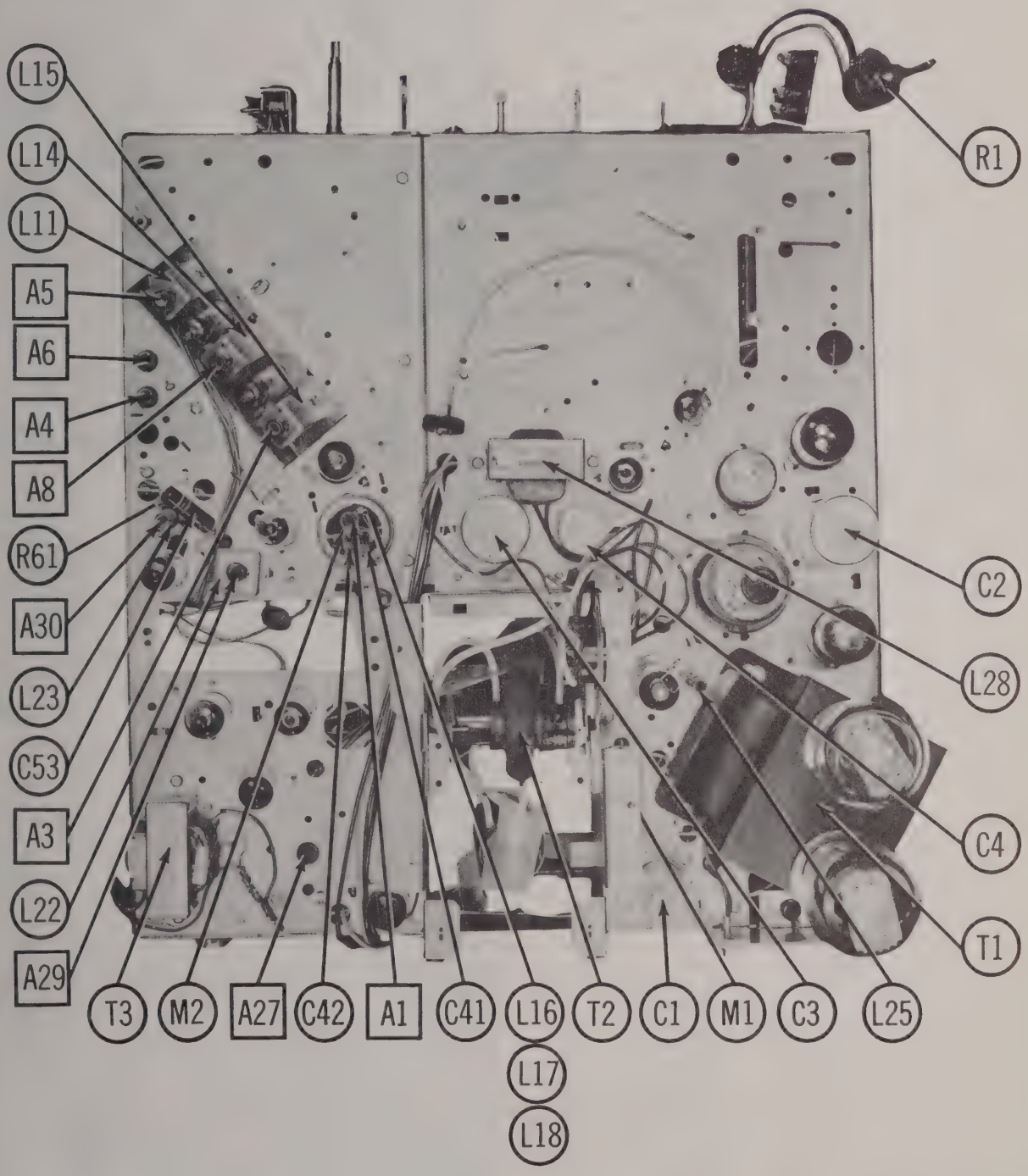
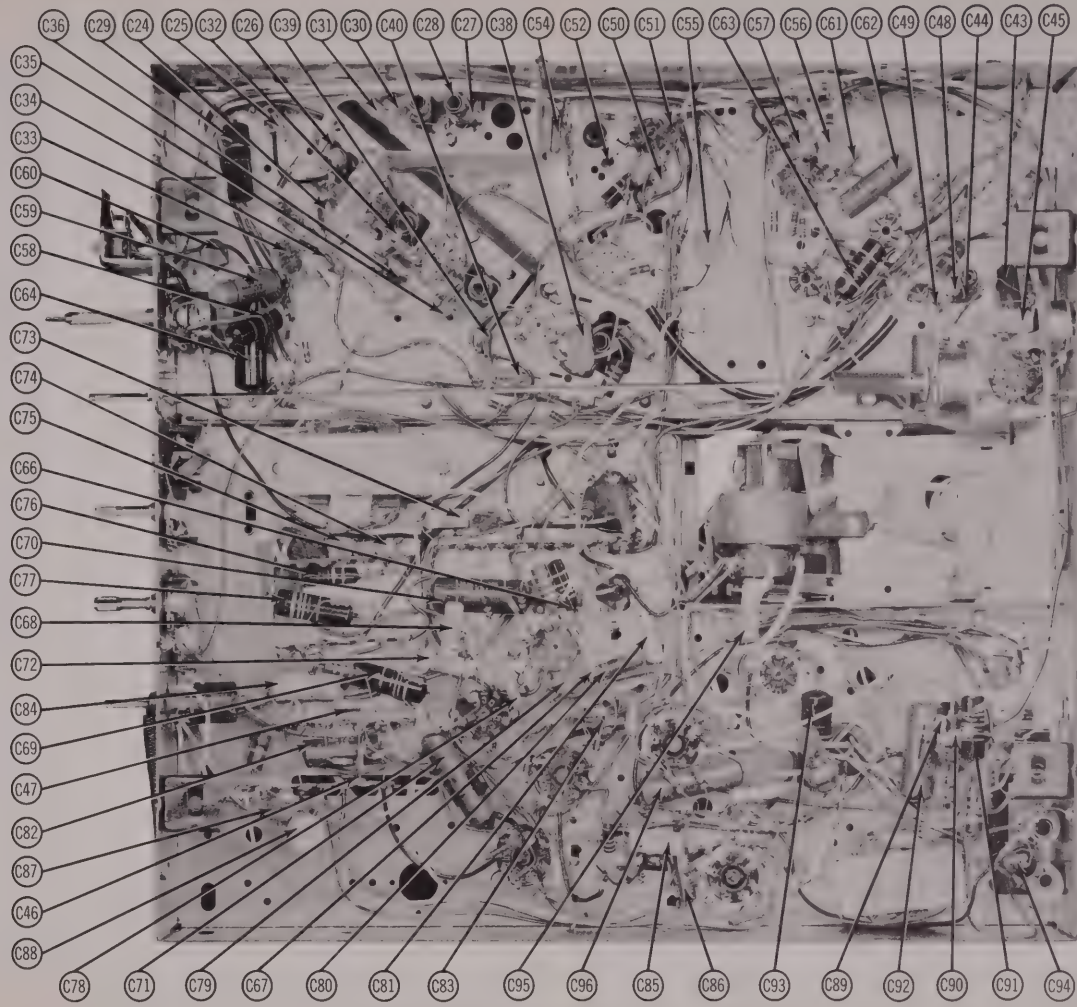


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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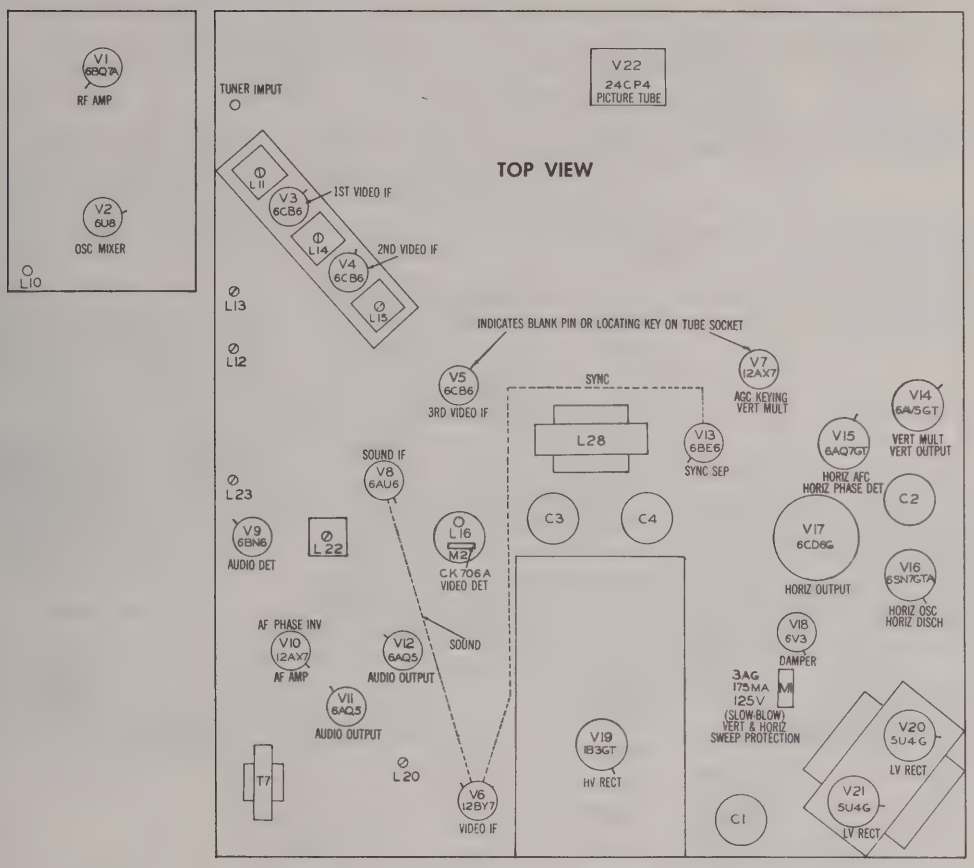
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6, V20**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V7, V22**
Has pic, no sound - **V8, V9, V10, V11, V12**
Overloaded picture - **V7**

SYNC FAILURE
No vert. sync - **V7, V13, V14**
No horiz. sync - **V13, V15, V16**
No vert. or horiz. sync - **V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V21, V22, Fuse (M1)**
No vertical deflection - **V7, V14**
Poor vert. linearity or foldover - **V7, V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20, V21**
Vert. off freq. - **V7, V13, V14**
Horiz. off freq. - **V13, V15, V16**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Picture tube may be removed from chassis for easier slug adjustment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 2 volt battery to the ungrounded side of C29. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	470MFD	High side to pin 1 (grid) of V5. Low side to chassis.	44MC (10MC Swp)	45.75MC 39.75MC 44MC	Any non-interfering channel.	Vert. amp. thru 10KΩ to point (A). Low side to chassis.	A1, A2	Adjust A1 and A2 for maximum gain. Place marker 45.75MC and 39.75MC for correct position as on response curve Fig. 1. If the response curve cannot be obtained, check position of slugs. Be sure they are away from the center of the coils.
2	"	High side to pin 1 (grid) of V4. Low side to chassis.	"	44MC	"	"	A3	Adjust for response similar to Fig. 2
3	"	High side to point (B). Low side to chassis.	"	47.25MC 41.25MC 39.75MC	"	"	A4, A5, A6	Remove the bias battery. Adjust scope gain to amplify the trap region of the response curve. Adjust for MINIMUM marker amplitude. Adjust for response similar to Fig. 3. With maximum scope gain, top of response curve may not show on scope.
4	"	"	"	42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9	Replace bias battery at -2 volts. Adjust for response curve similar to Fig. 4. If necessary, retouch A3 for desired response. Do not readjust A1 and A2 in this step.

OSCILLATOR ALIGNMENT

The master oscillator adjustment (L8) is to be made only if the adjustment of the individual channel oscillator adjustments fail to bring the channels within the range of the fine tuning control. If channels 2 thru 6 fall within the range of the fine tuning control but the higher channels do not, slightly readjust L8 to bring in the higher channels. If channels 2 thru 6 do not fall within tuning range, readjust the bulls-eye adjustment on rear of tuner.
Connect the negative lead of a 1 volt bias to the ungrounded side of C29. Positive lead to chassis.
Turn the oscilloscope gain up so that the sound trap notch in the response curve becomes visible.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC Swp)	59.75MC	2	Vert. Amp. to point (A). Low side to chassis.	A10	Adjust to place sound marker in notch as in Fig. 5.
			63MC (10MC Swp)	65.75MC	3		A11	
			69MC (10MC Swp)	71.75MC	4		A12	
			79MC (10MC Swp)	81.75MC	5		A13	
			85MC (10MC Swp)	87.75MC	6		A14	
			177MC (10MC Swp)	179.75MC	7		A15	
			183MC (10MC Swp)	185.75MC	8		A16	
			189MC (10MC Swp)	191.75MC	9		A17	
			195MC (10MC Swp)	197.75MC	10		A18	
			201MC (10MC Swp)	203.75MC	11		A19	
			207MC (10MC Swp)	209.75MC	12		A20	
			213MC (10MC Swp)	215.75MC	13		A21	

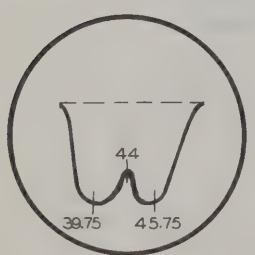


FIG. 1

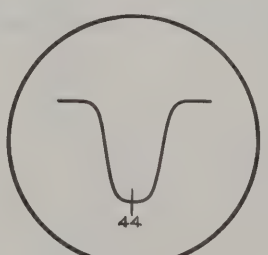


FIG. 2

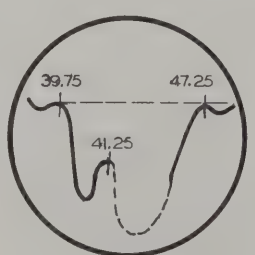


FIG. 3

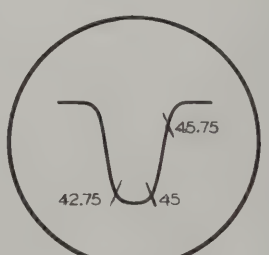


FIG. 4

ALIGNMENT INSTRUCTIONS (cont)

RF AND MIXER ALIGNMENT

Leave the bias battery connected as under "Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	61.25MC 65.75MC	3	Vert. amp. thru 10KΩ to point Ⓒ. Low side to chassis.	A22, A23, A24	Adjust for response similar to Fig. 6.
7	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A25, A26	Adjust for symmetry of response curve similar to Fig. 7.

SOUND IF ALIGNMENT

Connect an attenuator (Zenith part no. 8-17203 or equivalent) in series with the receiver antenna.
Tune in a tone modulated TV signal and adjust the attenuator until the signal falls below the limiting level of the (6BN6) audio detector, as evidenced by a hiss similar to superregeneration.
Adjust the sound take-off transformer (A27) and (A28), the sound IF coil (A29) and the quadrature coil (A30) for maximum sound of best quality.
Adjust the buzz control (R9) for minimum intercarrier buzz. If the intercarrier buzz cannot be eliminated with the buzz control, check the AGC delay setting.
If during the sound IF alignment the signal rises above the limiting level (hiss disappears), increase the attenuation until the hiss returns.

UHF TUNER ALIGNMENT

Alignment of the UHF tuner should not be attempted unless proper test equipment is available.
Switch receiver to UHF position.
Leave bias supply connected as under "Video IF Alignment" and adjust for -2 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 9	Across UHF antenna terminals thru matching network (Fig. 9).	713MC (10MC Swp)	711.25MC	54	Vert. Amp. thru 10KΩ to point Ⓐ Low side to chassis.	A31	Tuner rocker arm should be in the horizontal position. If necessary, loosen the set screw and adjust tuner shaft so that rocker arm is horizontal with indicator set to channel 54. Do not adjust A31 unless oscillator calibration if off more than 3 channels . If necessary, adjust A31 for response similar to Fig. 8 with video marker at 50%. The image (weaker response) will appear also. The response toward the counter clockwise position of A31 is the correct response.
9.	"	"	"	"	"	"	A32, A33	Adjust for maximum amplitude and symmetry of response similar to Fig. 8.
10.	"	"	473MC (10MC Swp)	471.25MC	14	"		Check for response similar to Fig. 8. If oscillator is off more than 3 channels adjust the oscillator travel adjustment (osc., mixer and ant. travel adjustments are the 3 round thump screws on top of the tuner) to scale. Care must be used in making these adjustments so as not to move the rocker arm out of its bearing. Set the mixer and antenna travel adjustments for maximum response on scope.
11.	"	"	887MC (10MC Swp)	885.25MC	83		A34, A35, A36	Adjust A34 to place video marker at 50% on response curve as in Fig. 8. Adjust A35 and A36 for maximum amplitude and symmetrical response.

FIG.5

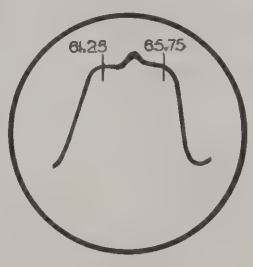


FIG.6

FIG.7

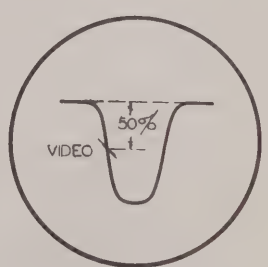


FIG.8

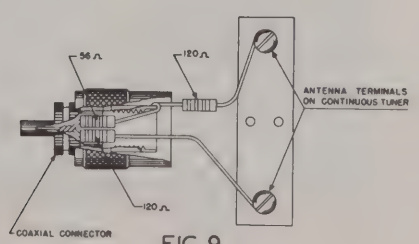


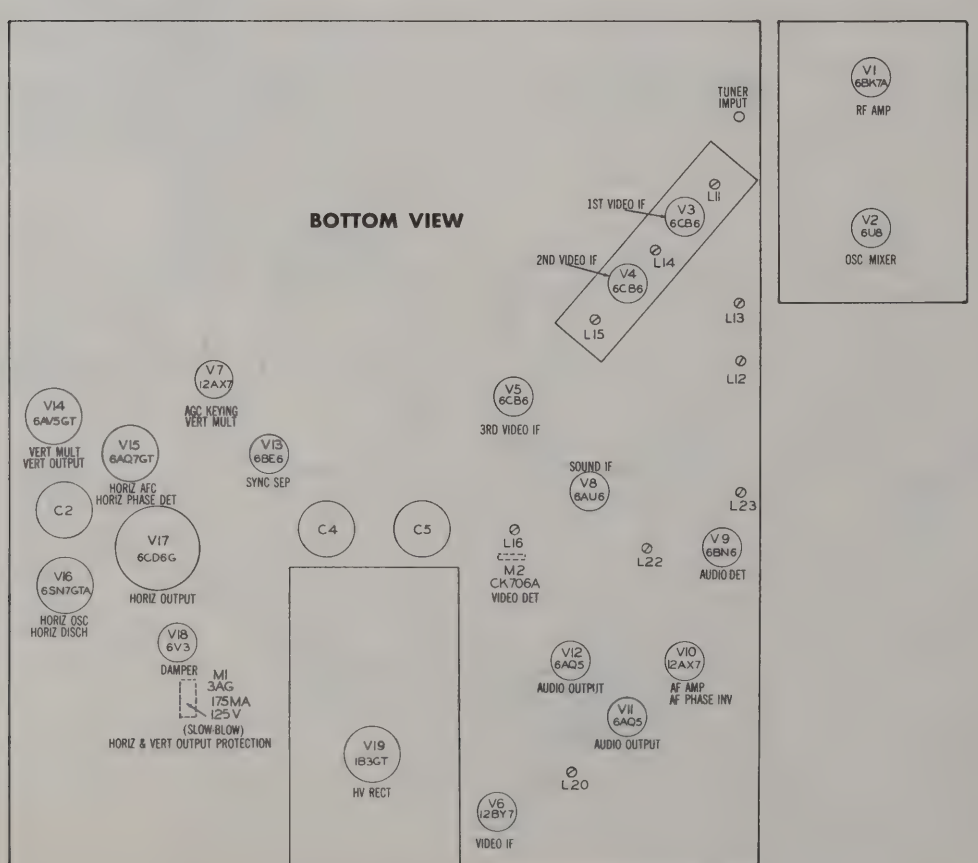
FIG.9

ZENITH MODELS R2671E, EU, R, RU, R2975R, RU, R2976E, EU, R2979E, EU (Ch. 22R21, U)

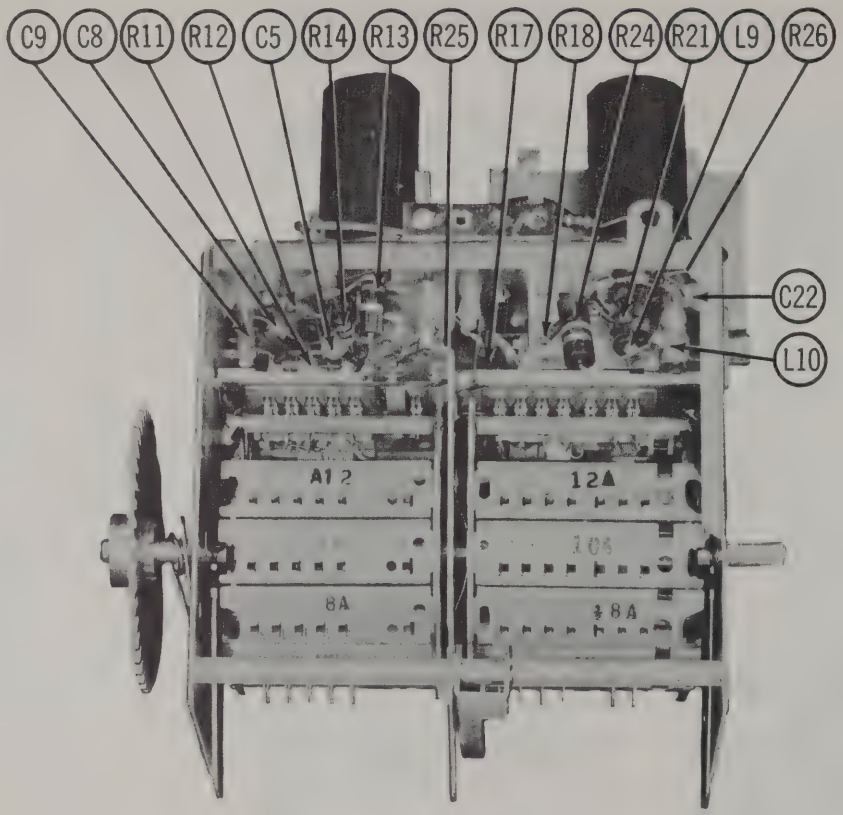
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7A	†800Ω	†50KΩ	INF	.1Ω	0Ω	INF	3.5Meg	47Ω	0Ω
V 2	6U8	†10.3KΩ	68KΩ	†100KΩ	.1Ω	0Ω	†320Ω	0Ω	2.2KΩ	12.2KΩ
V 3	6CB6	1.2Meg	500Ω	.1Ω	0Ω	■500Ω	■500Ω	0Ω		
V 4	6CB6	■7KΩ	■15Ω	.1Ω	0Ω	†500Ω	†500Ω	70KΩ		
V 5	6CB6	270Ω	400Ω	.1Ω	0Ω	†5.6KΩ	†5.6KΩ	0Ω		
V 6	12BY7	15Ω	2.7KΩ	15Ω	0Ω	0Ω	.1Ω	†5.5KΩ	†22KΩ	15Ω
V 7	12AX7	▲3.5Meg	600KΩ	85KΩ	0Ω	0Ω	†700KΩ	3.9KΩ	6.5KΩ	.1Ω
V 8	6AU6	100KΩ	0Ω	.1Ω	0Ω	†32KΩ	†32KΩ	0Ω		
V 9	6BN6	160Ω	.3Ω	.1Ω	0Ω	†22KΩ	220KΩ	▲680KΩ		
V 10	12AX7	†70KΩ	60KΩ	1.2KΩ	0Ω	0Ω	†70KΩ	100KΩ	1.8KΩ	.1Ω
V 11	6AQ5	130KΩ	100Ω	.1Ω	0Ω	†900Ω	†600Ω	130KΩ		
V 12	6AQ5	80KΩ	100Ω	.1Ω	0Ω	†900Ω	†600Ω	80KΩ		
V 13	6BE6	18KΩ	0Ω	.1Ω	0Ω	†90KΩ	†47KΩ	10Meg		
V 14	6AV5GT	2.2Meg	0Ω	900Ω	2.2Meg	▲800Ω	†25KΩ	.1Ω	†25KΩ	
V 15	6AQ7GT	2Meg	1Meg	0Ω	3Meg	†47KΩ	470Ω	.1Ω	0Ω	
V 16	6SN7GTA	47KΩ	●560KΩ	0Ω	32KΩ	†100Ω	10.5KΩ	0Ω	.1Ω	
V 17	6CD6G	▲11KΩ	.1Ω	47Ω	INF	1Meg	1Ω	0Ω	▲11KΩ	Top Cap ●5.5Ω
V 18	6V3	●7.5Ω	▲150Ω	INF	.1Ω	0Ω	INF	▲150Ω	▲150Ω	▲150Ω Top Cap 220KΩ
V 19	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								Top Cap ●205Ω
V 20	5U4G	INF	20KΩ	INF	10Ω	INF	9Ω	INF	20KΩ	
V 21	5U4G	INF	50KΩ	INF	13Ω	INF	12Ω	INF	50KΩ	
V 22	24CP4A	0Ω	48KΩ	Pin 10 ▲135Ω	Pin 11 †220KΩ	Pin 12 .1Ω				

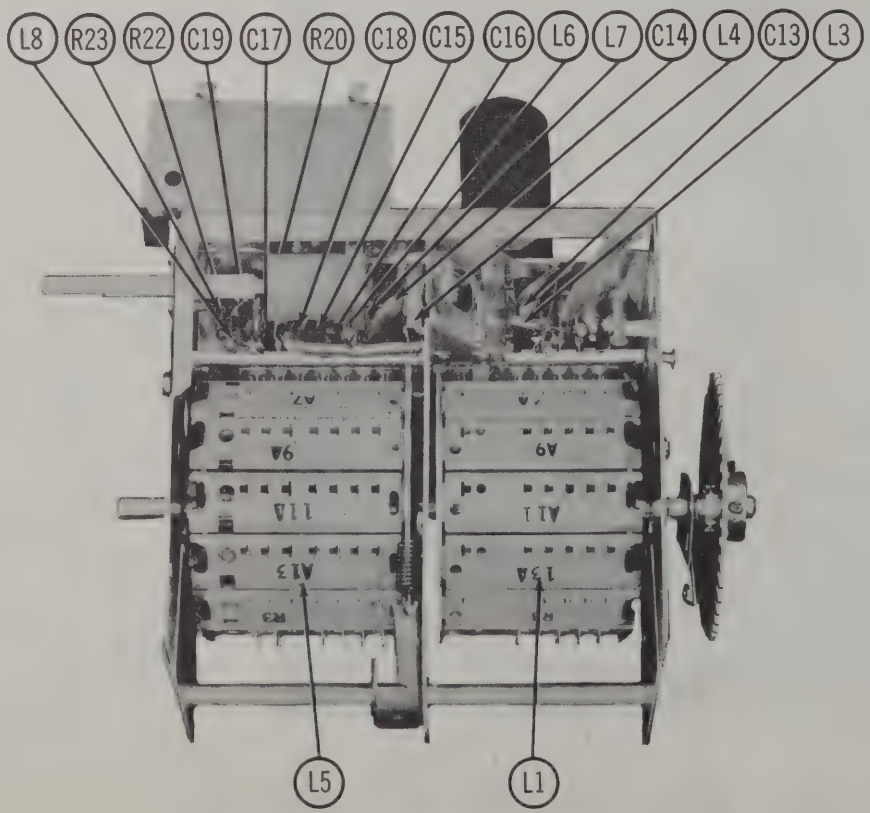
† MEASURED FROM PIN 8 OF V20.
■ MEASURED FROM PIN 7 OF V4.
▲ MEASURED FROM PIN 2 OF V21.
● MEASURED FROM TOP CAP OF V18.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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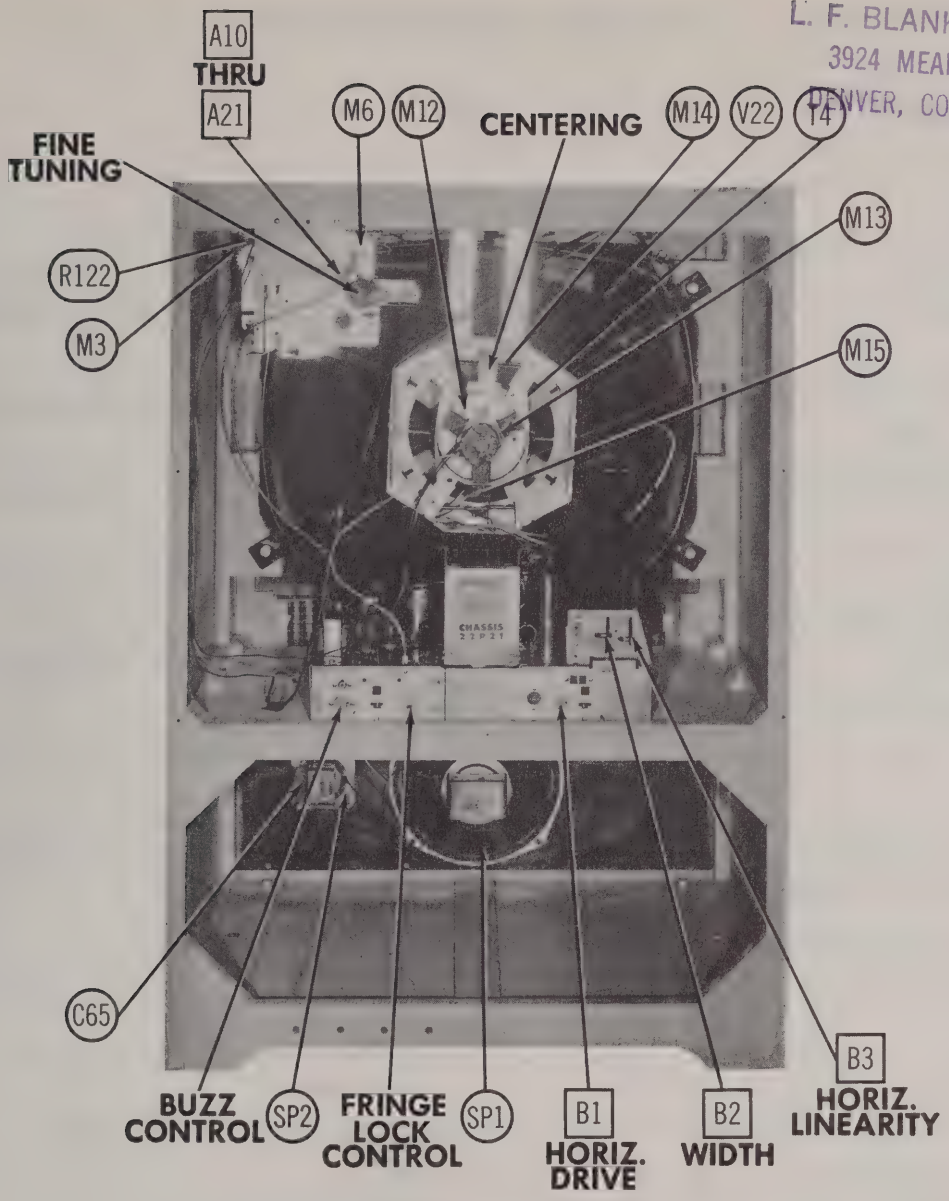

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on a TV station, preferably a test pattern.

Adjust horizontal hold (L24) located on front of chassis until picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) for greatest width.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

AGC DELAY CONTROL ADJUSTMENT

Connect the vertical amplifier of an oscilloscope through 10KΩ to point A . Select the strongest signal being received and adjust the delay control for 2 volts peak output.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18, V20 and V21. Check adjustments B1, B2 and B3. Check R117, R118, R111, C90, T2, T4A and other associated components.

DRIVE LINES

Check by substitution V16, V17 and V18. Check adjustments B1 and B3. Check R115, R117, R118, C90, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V15, V16, V17 and V18. Check C83 for open. Check L24, C87, C85 and other associated components.

XMAS TREE EFFECT

Check by substitution V15, V16, V17 and V18. Check T2 and T4 for internal arcing. Check L24, C87, C82, C81, C84, R105, R106 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V7 and V14. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C3B, C3C, C3D, R95, R94, R92 and other associated components.	Check C71, C70, R85, R86, R8 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V7 and V14. Check vertical size and vertical linearity controls for proper operation. Check T3, T4B, R85 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V7 and V14. Check R85, R86, R8, C4B, C71 and other associated components.

COMPRESSED AT TOP

Check by substitution V7 and V14. Check R4, R92, C3D, C71 and other associated components.

FOLDS

Check by substitution V7 and V14. Check R87, R92, C69, C71 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V13. Check R78, R79, R80, C4A, C67, C66 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V7. Check M11, C68, C70, C72, R5 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check C78, C79, C85, C87, R106, R105 and other associated components.

HORIZONTAL BENDING

Check by substitution V13, V15 and V16. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C43, C45, L21, R50, R44 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A27. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check contrast control. Check C44, C45, R43, L19, L21 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check video crystal detector network. Check L19, L21, C45 and other associated components.

SMEAR

Substitute V6. Check video crystal detector network. Check L19, L21, C45 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9, V10, V11 and V12. Check V10, V11 and V12 using audio signal generator. Apply audio signal across R1.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C55, C56, C57, C63, C62, C59, R68, R65, R74, R75, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments A30 and R9. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V20 and V21. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V20 and V21. Check B+ filter and decoupling network.

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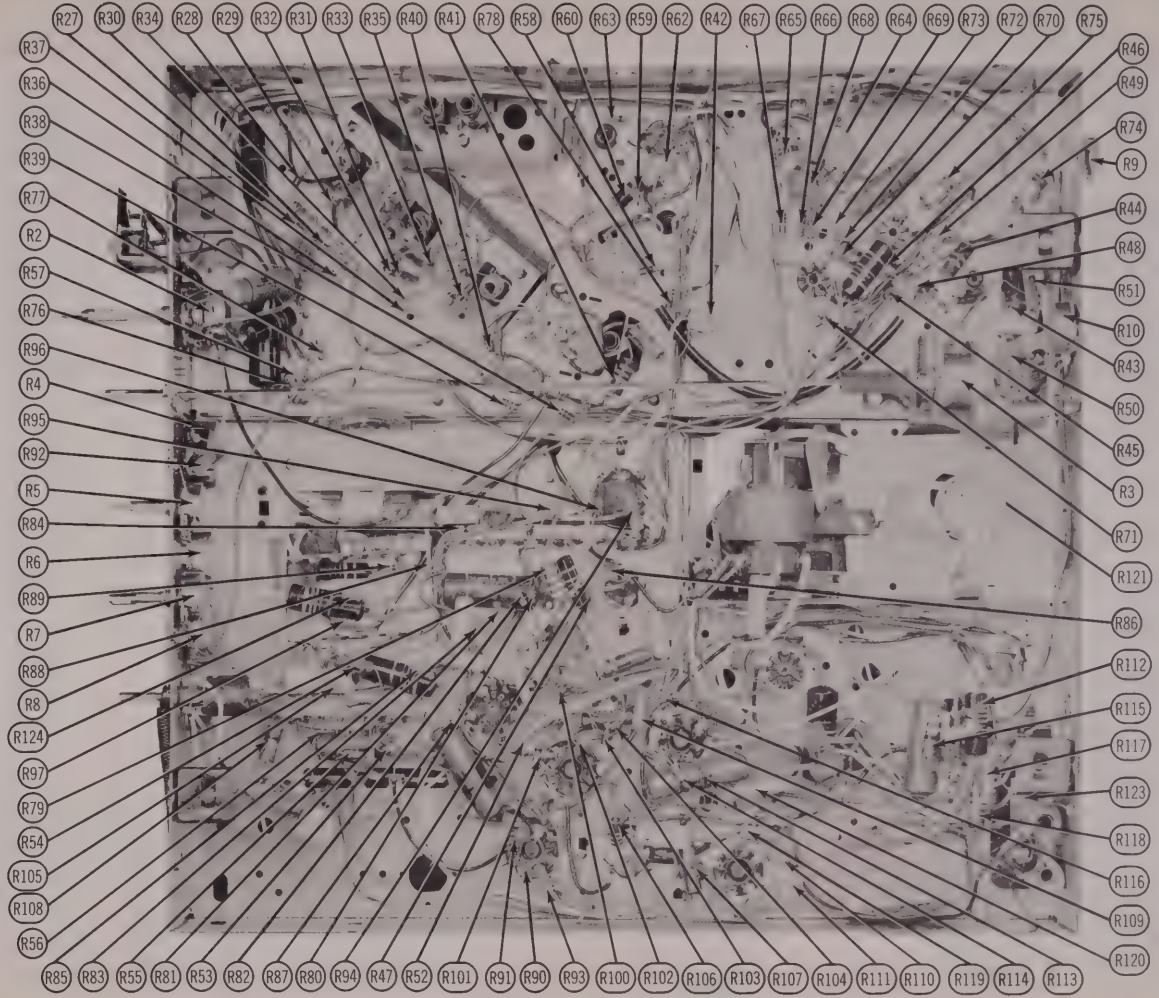
DENVER, COLORADO

ZENITH MODELS R2671E, EU, R, RU, R2975R, RU, R2976E, EU, R2979E, EU (Ch. 22R21, U)

ALTERNATE TUNER SCHEMATIC



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6BK7A	6BK7A	9AJ	
V2	Mixer-Osc.	6U8	6U8	9AE	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying-Vert. Mult.	12AX7	12AX7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Audio Det.	6BN6	6BN6	7DF	
V10	AF Amp-AF Phase Inverter	12AX7	12AX7	9A	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	Audio Output	6AQ5	6AQ5	7BZ	
V13	Sync Sep.	6BE6	6BE6	7CH	
V14	Vert. Mult. - Vert. Output	6AV5GT	6AV5GT	6CK	
V15	Horiz. AFC-Horiz. Phase Det.	6AQ7GT	6AQ7GT	8CK	
V16	Horiz. Osc. - Horiz. Discharge	6SN7GTA	6SN7GTA	8BD	
V17	Horiz. Output	6CD6G	6CD6G	5BT	
V18	Damper	6V3	6V3	9BD	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	5U4GA used as an alternate.
V21	LV Rectifier	5U4G	5U4G	5T	5U4GA used as an alternate.

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CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	ZENITH PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V22	24CP4A	24CP4A	24CP4A	24CP4A	24CP4A	12N	
				24CP4		12N	
	27EP4	27EP4	27EP4	27EP4		12D	
				27GP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲20	450	22-2566			FP146	TM-40-450	S-270	
B	■40	450				TC75	TD-20-450	MT-4520	
C2A	■40	400	22-2437			FP377	TM-4111	Q-065	
B	▲80	400				TC77			
C	▲30	400							
C3A	▲4	350	22-2479			FP454.6			
B	■40	400							
C	▲10	475							
D	100	50							
C4A	▲4	350	22-2605			FP171	TM-3096	S-310	
B	■10	475				TC60		MT-4504	
C5	800		22-2331	DD-801	801-001	DC-521			
C6	800		22-2577						
C7	800		22-2577						
C8	2.4		22-2596						
C9	2.5-6		22-2221						
C10	800		22-2577						
C11	.85-2.3		22-2453	829-3	3115-01-0R5	CT565A			
C12	800		22-2577						
C13	800		22-2331	DD-801	801-001	DC-521			
C14	120		22-2591	D6-121	811-121	UC-5312			
C15	19		22-2406						
C16	.6-3		22-2504	829-3	3115-01-0R5	CT565A			
C17	2		22-2434						
C18	5.6		22-2499						
C19	3.4		22-2592						
C20	800		22-2577						
C21	800		22-2577						
C22	2		22-2585						
C23	800		22-2577						
C24	10000		22-3	DD-103	811-01	DC-511			
C25	470		22-2214	D6-471	GP2K-471	UC-5347		K-1347	
C26	8		22-2481						
C27	20		22-2593	TCZ-20	NP0K-200	ZT-542		KR-1420	
C28	24		22-2515	TCZ-24	NP0L-240			KR-1424	
C29	.15	200	22-2147			PT4015	IMP2P-15	3302015	
C30	24		22-2515	TCZ-24	NP0L-240			KR-1424	
C31	45		22-2600						
C32	330		22-2309	D6-331	GP2K-331	UC-5333		K-1333	
C33	1000		22-7	DD-102	801-001	DC-521		K-1210	
C34	1000		22-7	DD-102	801-001	DC-521		K-1210	
C35	470		22-2302	D6-471	GP2K-471	UC-5347		K-1347	
C36	1000		22-7	DD-102	801-001	DC-521		K-1210	
C37	470			D6-471	GP2K-471	UC-5347		K-1347	Note 1
C38	470	500	22-2524	D6-471	GP2K-471	UC-5347		K-1347	
C39	470		22-2214	D6-471	GP2K-471	UC-5347		K-1347	
C40	1000		22-2112	D6-102	GP2L-102	UC-521		K-1210	
C41	4.5		22-2522						
C42	7		22-2375						
C43	.022	200	22-2071	DF-203	817-02	PT4122	IMP4-S22	3304122	
C44	47		22-2467	TCZ-47	NP0K-470	ZT-5447		KR-1447	
C45	.1	200	22-1777	DF-104		PT401	IMP2-P1	330201	
C46	10000		22-3	DD-103	811-01	DC-511	IMP6-S1	330611	
C47A	1000		22-2545	DD2-102	812-001	DCD-521			
B	1000								
C48	3.3		22-2343	TCZ-3.3	NP0A-3R3	ZT-5533			
C49	50		22-2460	D6-500	GP1K-500	UC-545		K-1450	
C50A	1000		22-2553	DD2-102	812-001	DCD-521			
B	1000								
C51	10000		22-3	DD-103	811-01	DC-511			

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.
C52	10		23-2378	TCZ-10	NP0K-100	ZT-541		KR-1410
C53	.047	200	23-1738	DF-503		PT6147	IMPD-S47	3302147
C54	680		23-2320	DF-681	GP2K-681	UC-5368		K-1368
C55	10000		23-	DD-103	811-01	DC-511	IMPE-01	33061
C56	100		23-5	D6-101	901-101	UC-531		K-1310
C57	100		23-5	D6-101	901-101	UC-531		K-1310
C58	.022	600	23-1813	DF-303	817-03	PT6123	IMPE-S22	3306122
C59	.047	600	23-1844	DF-503		PT6147	IMPE-S47	3306147
C60	1000			DD-102	901-001	DC-511		K-1310
C61	100		23-5	D6-101	901-101	UC-531		K-1310
C62	.047	600	23-1844	DF-503		PT6147	IMPE-S47	3306147
C63	.0047	1600	23-2564	DM15-502	HK5KV-473	PT6347	CY15-D5	3116-005
C64	.47	200	23-2146			PT6047	IMPP-P47	3303047
C65	1.0	130	23-2469			PT41		
C66	.0033	400	23-1631	D6-332	GP3-333-332	PT6333	IMPE-D33	3306233
C67	37		23-2398	TCZ-37	NP0K-370			K-1437
C68	.0033	600	23-1803	D6-332	GP3-333-332	PT6323	IMPE-D33	3306232
C69	.033	600	23-2325			PT6133	IMPE-S3	330613
C70	33	300	23-2198					3306133
C71	.1	600	23-2001	DF-104		PT601	IMPE-P1	330601
C72	.01	200	23-1733					
C73	.001	600	23-2134			MCB256		KR-1210
C74	.001	600	23-2136			MCB256		KR-1210
C75	470	3000	23-2513	DD30-471	5KV-471	MCL547		
C76	.0022	600	23-1614					CR-1222
C77	.033	600	23-1901			PT6133	IMPE-S3	330613
C78	.22	600	23-2318					KR-1313
C79	150	500				MCB256		KR-1215 Note 2
C80	.0022	200		D6-222	GP3-333-332	PT6322	IMPE-D22	3306221 Note 3
C81	.0047	200	23-1843	D6-472	GP3-339-472	PT6347	IMPE-D47	3306347
C82	.15	200	23-2186			PT6215	IMPE-P15	3303015
C83	.001	200	23-1839	D6-102	GP2L-102	PT631	IMPE-D1	330631
C84	.1	200	23-1777	DF-104		PT601	IMPE-P1	330201
C85	680	500	23-2135					KR-1268
C86	.0015	400	23-1795	D6-152	GP2L-152	PT6215	IMPE-D15	3306215
C87	1000	500	23-2183			MCB256		KR-1210
C88	1000		23-2350	DD-102	901-001	DC-532		K-1310
C89	330		23-2309	D6-331	GP2L-331	UC-5333		K-1333
C90	330		23-2309	D6-331	GP2L-331	UC-5333		K-1333
C91	.047	400	23-1776	DF-503		PT6147	IMPE-S47	3306147
C92	.22	200	23-2187			PT6223	IMPE-P23	3303022
C93	.15	400	23-2341			PT6215	IMPE-P15	3306015
C94	.1	400	23-2340	DF-104		PT601	IMPE-P1	330401
C95	.0047	650	23-1849	D6-472	GP3-333-472	PT6347	IMPE-D47	3306347
C96	.1	600	23-1841	DF-104		PT601	IMPE-P1	330601
C97	75	2000						

Note 1: Not used in some versions.
Note 2. Some versions use 130MMF in this application (part #23-2306).
Note 3. Some versions use .001MFD in this application (part #23-1839).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2239	QI3-137	A47-1Meg-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWE-13	K3-5 ⑤	UB-26	Attach to R1A
R2A	1Meg	½	63-2234	*QJ-635		F1-S5	UF16L ⑦	Bass - Panel
B	150KΩ	½				R2-25	UR254A ⑦ †	Treble - Rear
C	Spring					RS-1	Not Req.	Attach to R2A
R3A	5000Ω	4	63-2321		A10-5000	SVP-999	MSMPK	Contrast (Wire wound)
B	Shaft		Not Req.		Not Req.	FS-2	Not Req.	Attach to R3A
R4A	1500Ω	½	63-2313	WK-1500	A43-1500	VK-150	R1501L	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKH-1/4	Not Req.	Not Req.	Attach to R4A
R5A	150KΩ	½	63-2303	QII-159	A47-150K-S	AB-46	U-53	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	1.5KΩ	½	63-2078	QII-019	A47-1.5K-S	AB-02	U-38	AGC
B	Shaft		Not Req.	BQ	FKH-1/4	AK-1	Not Req.	Attach to R6A
R7A	300KΩ	½	63-2327	QII-139	A47-300K-S	AB-46	U-53	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R7A
R8A	7.5Meg	½	63-2919	QII-142	A47-7.5Meg-S	AB-98	U-53	Height
B	Shaft		Not Req.	BQ	FKH-1/4	AK-1	Not Req.	Attach to R8A
R9	600Ω	1	63-2167		29-600			Buzz (Wire wound)
R10A	7.5Meg	½	63-2919	QII-143	A47-7.5Meg-S	AB-98	U-53	Fringe Lock
B	Shaft		Not Req.	BQ	FKH-1/4	AK-1	Not Req.	Attach to R10A

* Switch cover shield.
† Universal replacement (Mallory exact duplicate part no. UE-1567)
* CONCENTRIK EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: R1-137 & P1-126 (PANEL)
R13-130 & R7-308 (REAR)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	NOTES
R11	56KΩ 5%	½		BTS-56K 5%	
R13	32KΩ	1	63-1941	BTS-32K	
R13	47Ω	1		BTA-47	
R14	470KΩ	½	63-1957	BTS-470K	
R15	100KΩ	½	63-1869	BTS-100K	
R16	100KΩ	½	63-1869	BTS-100K	
R17	4700Ω	½	63-1813	BTS-4700	
R18	470Ω	½	63-1772	BTS-470	
R19	220Ω	½	63-1753	BTS-220	
R20	68KΩ	½	63-1868	BTS-68K	
R21	100KΩ	½	63-1869	BTS-100K	
R22	10KΩ	½	63-1828	BTS-10K	
R23	3300Ω	½	63-1800	BTS-3300	
R24	10KΩ	½	63-1170	BTS-10K	
R25	33KΩ	½	63-1843	BTS-33K	
R26	2KΩ	½		BTS-2K	Note 1
R37	2.2Meg	½	63-1926	BTS-2.2Meg	
R46	68Ω	½	63-1727	BTS-68	
R47	56Ω	½	63-1733	BTS-56	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	NOTES
R30	180Ω	1	63-1754	BTS-180	
R31	4700Ω	2	63-1772	BTS-470	
R32	27KΩ	1	63-1845	BTS-27K	
R33	15Ω	1	63-1701	BTS-15Ω	
R34	5800Ω	½	63-1851	BTS-5800	
R35	12KΩ	1	63-1831	BTS-12K	
R36	120KΩ	1	63-1873	BTS-120K	
R37	120KΩ	1	63-1873	BTS-120K	
R38	470Ω	1	63-1772	BTS-470	
R39	2700 5%	½	63-1780	BTS-270 5%	
R40	130Ω	1	63-1747	BTS-130	
R41	5600Ω	2	63-1773	BTS-5600	
R42	15KΩ	1	63-1834	BTS-15K	
R43	15Ω	1	63-1701	BTS-15	
R44	22KΩ	2	63-1566	BTS-22K	
R45	100KΩ	1	63-1869	BTS-100K	
R48	100KΩ	1	63-1869	BTS-100K	
R47	10Meg	1	63-1953	BTS-10Meg	
R48	33KΩ	1	63-1843	BTS-33K	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	NOTES
R49	47KΩ	½	63-1855	BTS-47K	
R50	680Ω	1	63-2290	BTA-680	
R51	220KΩ	½	63-1864	BTS-220K	
R52	390KΩ	½	63-1920	BTS-390K	
R53	680KΩ	½	63-1904	BTS-680K	
R54	180KΩ	1	63-2313	BTA-180K	
R55	220KΩ	½	63-1864	BTS-220K	
R56	220KΩ	½	63-1864	BTS-220K	
R57	820Ω	½	63-1782	BTS-820K	
R58	100KΩ	½	63-1870	BTS-100K	
R59	10KΩ	½	63-1827	BTS-10K	
R60	22KΩ	½	63-2141	BTS-22K	
R61	220KΩ	½	63-1863	BTS-220K	
R62	680KΩ	½	63-1904	BTS-680K	
R63	100KΩ	½	63-1788	BTS-1000	
R64	2200Ω	½	63-1799	BTS-2200	
R65	68KΩ	½	63-1863	BTS-68K	
R66	68KΩ	½	63-1863	BTS-68K	
R67	68KΩ	½	63-1862	BTS-68K	
R70	10Ω	2	63-1973	BTS-10	
R71	10KΩ	½	63-1828	BTS-10K	
R72	150KΩ	½	63-1877	BTS-150K	
R73	82KΩ	½	63-1866	BTS-82K	
R74	270Ω	2	63-2256		Note 2 & 5
R75	220Ω	2			Note 1 & 5
R76	2200Ω	½	63-1799	BTS-2200	
R77	10KΩ	½		BTS-10K	
R78	470KΩ	½	63-1957	BTS-470K	
R79	47KΩ	2	63-1167	BTB-47K	
R80	470KΩ	½	63-1957	BTS-470K	
R81	100KΩ	½	63-1869	BTS-100K	
R82	220KΩ	½	63-1863	BTS-220K	
R83	470KΩ	½	63-1957	BTS-470K	
R84	100KΩ	½	63-1869	BTS-100K	
R85	2.2Meg	½	63-1928	BTS-2.2Meg	
R86	22KΩ	½	63-1563	BTS-22K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	NOTES
R87	10KΩ	½	63-1827	BTS-10K	
R88	68KΩ	½	63-1862	BTS-68K	
R89	100KΩ	½		BTS-100K	
R90	330Ω	½	63-1806	BTS-330	
R91	2.2Meg	½	63-1926	BTS-2.2Meg	
R92	330Ω	½	63-2286	BTA-330	
R93	100Ω	½	63-1744	BTS-100	
R94	330Ω	½	63-2286	BTA-330	
R95	33KΩ	½	63-1957	BTA-33K	
R96	47KΩ	1	63-1184	BTA-47K	
R97	47KΩ	½	63-1856	BTS-47K	
R98	18Ω	½	63-1712	BTS-18	
R99	18Ω	½	63-1712	BTS-18	
R100	1Meg	½	63-1181	BTS-1Meg	
R101	1Meg	½	63-1181	BTS-1Meg	
R102	47KΩ	½		BTS-47K	Note 3
R103	100Ω	½	63-1744	BTS-100	
R104	1Meg	½	63-1181	BTS-1Meg	
R105	470Ω	½	63-1771	BTS-470	
R106	47KΩ	½	63-1184	BTA-47K	
R107	22KΩ	½	63-1843	BTS-22K	
R108	10KΩ	3	63-2145	BTS-10K	
R109	39KΩ	1		BTA-39K	Note 4
R110	47KΩ	½	63-1856	BTS-47K	
R111	560KΩ	½	63-2170	BTA-560K	
R112	47KΩ	½	63-1856	BTS-47K	
R113	100Ω	½	63-1744	BTS-100	
R114	1Meg	½	63-1183	BTS-1Meg	
R115	47Ω	2			
R116	100Ω	½	63-1744	BTS-100	
R117	22KΩ	½	63-1566	BTS-22K	
R118	22KΩ	3	63-1566	BTS-22K	
R119	4700Ω	3	63-2068	BTS-4700	
R120	4700Ω	2	63-2068	BTB-4700	
R121	15Ω	3	63-2214		
R122	8.2Ω	3	63-2216		
R123	100KΩ	½	63-1870	BTS-100K	
R124	2.2Meg	½		BTS-2.2Meg	

Note 1: Not used in some versions.
Note 2: Some versions may use a 470Ω 2 watt resistor in this application.
Note 3: Some versions may use a 375Ω resistor in this application.
Note 4: Some versions may use a 22KΩ resistor in this application.
Note 5: When replacing use original clamp or double original wattage rating.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordorson PART No.
T1	117VAC @ 2.5A	686VCT @ .190ADC Trap ⑤	554VCT @ .210ADC	96-1401						
	SEC. 3	SEC. 3								
	5VAC @ 6A	12.6VCT @ 6A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA ZENITH PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Rem PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T2	Horiz. Output Trans.	S-21317 ①							
T3	Vert. Output Trans.	95-1384		A-3081 ②				26855 ②	A-110X
T4A	Yoke-Horiz. (53MH)	95-1389							
B	Vert. (3.2MH)								
T5	Horiz. Linearity 0.5-2MH	S-19342		MWC-3 ③	209R1 ③	209U1A ③	WC-7 ③	WC-16 ③④	WC-12 ③⑤
T6	Width - (4-20MH) (.53-3.4MH)	S-18749							

① Includes tertiary winding and terminal assembly part no. S-21345; winding and terminal assembly part no. S-21345.
② Use 50 to 1 turns ratio.
③ Drill new mounting hole or use original slider.
④ Do not use tap.
⑤ Connect to cooled blue and green terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordorson PART No.	NOTES
T7	8.5KΩ CT	5Ω	95-1396	A-3824	A-2804 ①	8-53X	21011	22586 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	8Ω	49-754 ①			① Low frequency speaker.
SP2	3½"	PM	11.8Ω	49-777 ②		3A15T	② High frequency speaker.

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω		S-21712				Channel 2
B	Ant. Coil	0Ω		S-21713				Channel 3
C	Ant. Coil	0Ω		S-21714				Channel 4
D	Ant. Coil	0Ω		S-21715				Channel 5
E	Ant. Coil	0Ω		S-21716				Channel 6
F	Ant. Coil	0Ω		S-19947				Channel 7
G	Ant. Coil	0Ω		S-19948				Channel 8
H	Ant. Coil	0Ω		S-19949				Channel 9
I	Ant. Coil	0Ω		S-19950				Channel 10
J	Ant. Coil	0Ω		S-19951				Channel 11
K	Ant. Coil	0Ω		S-19952				Channel 12
L	Ant. Coil	0Ω		S-19953				Channel 13
L2	Fil. Choke	0Ω		30-391				
L3	Neut. Coil	0Ω		20-431				
L4	RF Coil	0Ω		20-537				
L5A	RF, Mixer Grid & Osc. Coils	0Ω		S-21705				Channel 2
B	RF, Mixer Grid & Osc. Coils	0Ω		S-21703				Channel 3
C	RF, Mixer Grid & Osc. Coils	0Ω		S-19864				Channel 4
D	RF, Mixer Grid & Osc. Coils	0Ω		S-19866				Channel 5
E	RF, Mixer Grid & Osc. Coils	0Ω		S-19867				Channel 6
F	RF, Mixer Grid & Osc. Coils	0Ω		S-19868				Channel 7
G	RF, Mixer Grid & Osc. Coils	0Ω		S-19867				Channel 8
H	RF, Mixer Grid & Osc. Coils	0Ω		S-19866				Channel 9
I	RF, Mixer Grid & Osc. Coils	0Ω		S-19870				Channel 10
J	RF, Mixer Grid & Osc. Coils	0Ω		S-19871				Channel 11
K	RF, Mixer Grid & Osc. Coils	0Ω		S-19872				Channel 12
L	RF, Mixer Grid & Osc. Coils	0Ω		S-19873				Channel 13
L6	Mixer Grid	0Ω		30-538				
L7	Mixer Grid Coil	0Ω		136-794				
L8	Osc. Trimmer Coil	0Ω		30-541				
L9	IF Coil	.4Ω		S-18559				
L9A	Conv. Plate	.3Ω		S-20903				Tapped at .1Ω
L11	1st Video IF	0Ω		S-21019			6323	Includes 41.25MC trap
L13	47.25MC trap	0Ω		S-21718	17-4502*		6326	
L14	38.75MC trap	0Ω		S-21719	17-4503*		6325	
L14	2nd Video IF	0Ω	0Ω	S-17907			6322	
L15	3rd Video IF	0Ω	0Ω	S-19953			6333	
L16	4th Video IF	.2Ω		S-20623				Complete assembly no. S-21686
L17	Series Peaking Coil	5.8Ω		S-17823	19-3180	TV-184	6644	146 Microhenries
L18	Shunt Peaking Coil	5.8Ω		S-21563	19-3180a	TV-184a	6644a	180 Microhenries; Wound on 2.7KΩ resistor is series
L19	Series Peaking Coil	.8Ω		S-21588	19-4004		6619	6.7 Microhenries
L20	4.5MC trap	12.5Ω	1.3Ω	S-21498	19-3128*		6552*	
L21	Series Peaking Coil	5Ω		S-21563				136 Microhenries; Wound on 5.6KΩ [redacted]
L22	Sound IF	.3Ω	.3Ω	S-20219	16-3445			
L23	Quadrature Coil	4.8Ω		S-19080	20-1004a	TV-181a	1470a	
L24	Boris. Osc.	165Ω		S-19743	19-4877			Tapped at 62Ω
L25	RF Choke	0Ω		20-528				
L26	RF Choke	1.1Ω		S-21753	19-4005		6623	11 Microhenries
L27	Ant. Ringing Coil	49Ω		S-21013	19-3180†	TV-184†	6180†	136 Microhenries; Wound on .01 cap.

* Use trap winding only.
▲ Detune trap.
▲ Series with a 2.7KΩ resistor.
▲ Parallel with 5.6KΩ resistor.
▲ Drill mounting hole.
† Parallel with .01 cap.

FILTER CHOKE

ITEM No	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordorson PART No.
L28	.190ADC	134Ω	2.8H	95-1371	C-3327			C5060	28C41
L29	.210ADC	93.5Ω	3.1H	95-1394	C-3226 ①		C-2LX	C5030 ①	28C44

① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

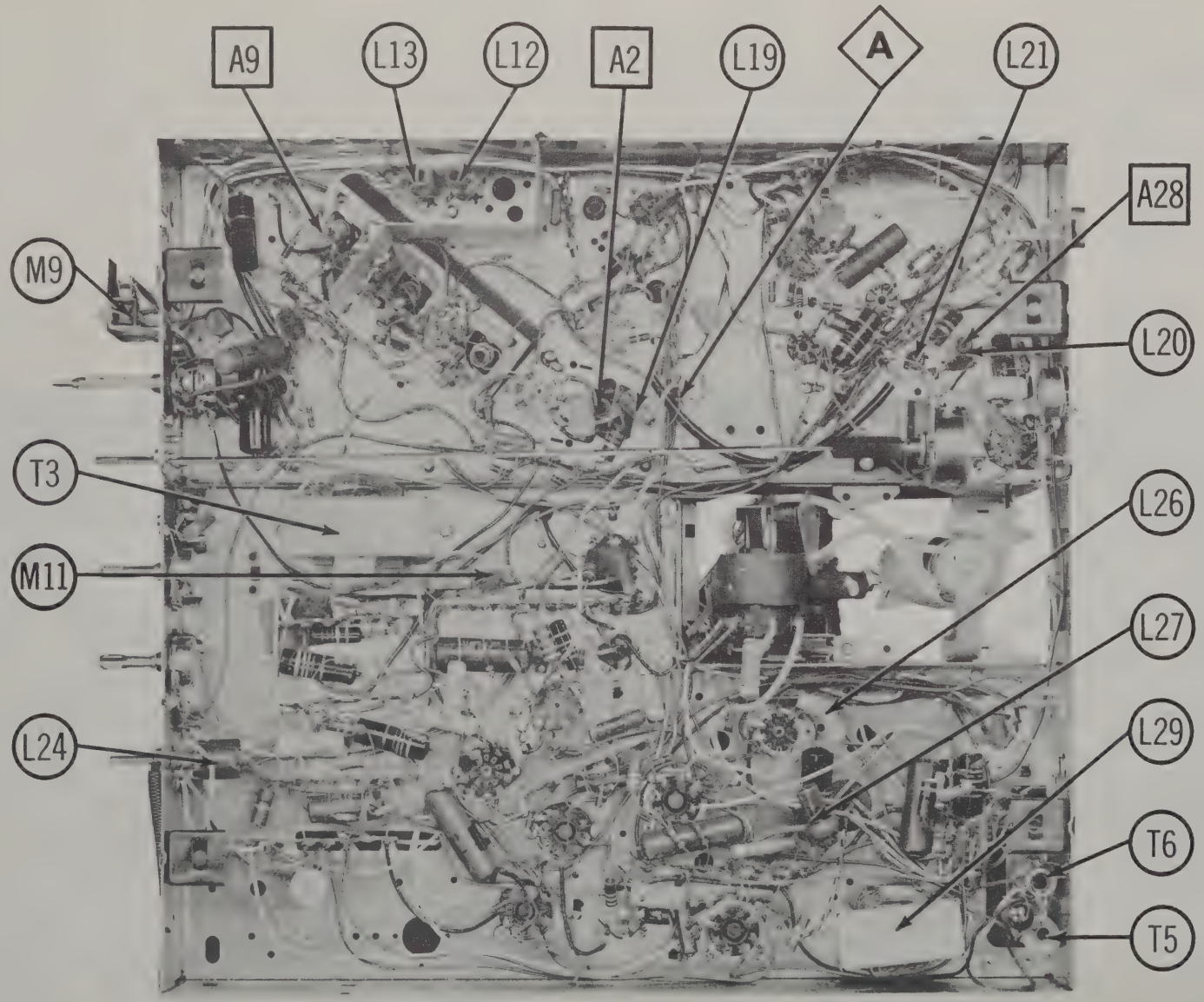
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	175MA 125V	136-30	83-1883	313.175 (3AG-175MA S/B)	357001	MDL 175/ 1000	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ZENITH PART No.	SYLVANIA PART No.		
M2	CK70GA	103-1	1N60 or 1N132		Video Det.

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Pilot Light	100-66	Chassis 22R21 - Type PR12
M4	Pilot Light	100-67	Chassis 22R21U - UHF Position of Turret
M5	Pilot Light	100-67	Chassis 22R21U - All Positions of Turret
M6A	Tuner	S-21735	Chassis 22R21-VHF-UHF (For UHF Provision use UHF Strips)
B	Tuner	S-21700	Chassis 22R21U - VHF
M7	Tuner	S-21864	Chassis 22R21U - UHF
M8	Trap		VHF Ant. Input Filter
M9	Switch	S-21831	TV-Phono
M10	Switch	85-546	VHF-UHF - Chassis 22R21U
M11	Integrator	87-1	Vertical
M12	Focus Magnet	S-20344	Includes Centering Device
M13	Ion Trap	S-17461	
M14	Correction Magnet	S-20360	
M15	Correction Magnet	S-20360	
B1	Trimmer Cap.	22-2398	Horiz. Drive
	Cabinet	14-1757E	Models R2671E, EU
	Cabinet	14-1757R	Models R2671R, RU
	Cabinet	14-1758R	Models R2975R, RU
	Cabinet	14-1759E	Models R2976E, EU
	Cabinet	14-1765E	Models R2979E, EU
	Knob Assembly	S-21883	VHF Channel Selector - All Models
	Knob	S-22024	Tuning (UHF) - All UHF Models
	Knob	S-22048	Dial (UHF) - All UHF Models
	Knob	46-1118	Horizontal Hold - All Models
	Knob	46-1182	Vert. Hold & Brightness - All Models
	Knob	46-1199	Contrast - All Models
	Knob	46-1335	On-Off-Volume - Models R2671E, R, EU, RU; R2975R, RU; R2976E, EU; R2979E, EU
	Knob	46-1355	Fine Tuning - Models R2671E, R, EU, RU; R2975R, RU; R2976E, EU; R2979E, EU
	Knob	46-1018	Tone - Bass - All Models
	Knob	46-1055	Tone - Treble - Models R2671E, R, EU, RU; R2975R, RU; R2976E, EU; R2979E, EU
	Safety Glass	192-192	Models R2671E, R, EU, RU
	Safety Glass	192-194	Models R2975R, RU; R2976E, EU; R2979E, EU;
	Mask	196-254	Models R2671E, R, EU, RU
	Mask	196-255	Models R2975R, RU; R2976E, EU; R2979E, EU;



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17, V18 and V19. Check M1 fuse. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C94, C93, C95, C91, C92, R117, R118, R115 and other associated components.	Check C84, C85, C86, C90, C87, L24, R111, R106, R105 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V20 and V21. Check C90, R117, R118, R115 and other associated components.

BLOOMING

Check by substitution V17, V18, V19, V20 and V21. Check C96, C90, R117, R118 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. NOTE: Due to interconnection between V3, V4 and V5, trouble in any one of these stages is likely to change voltage readings and gain in the other IF stages.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

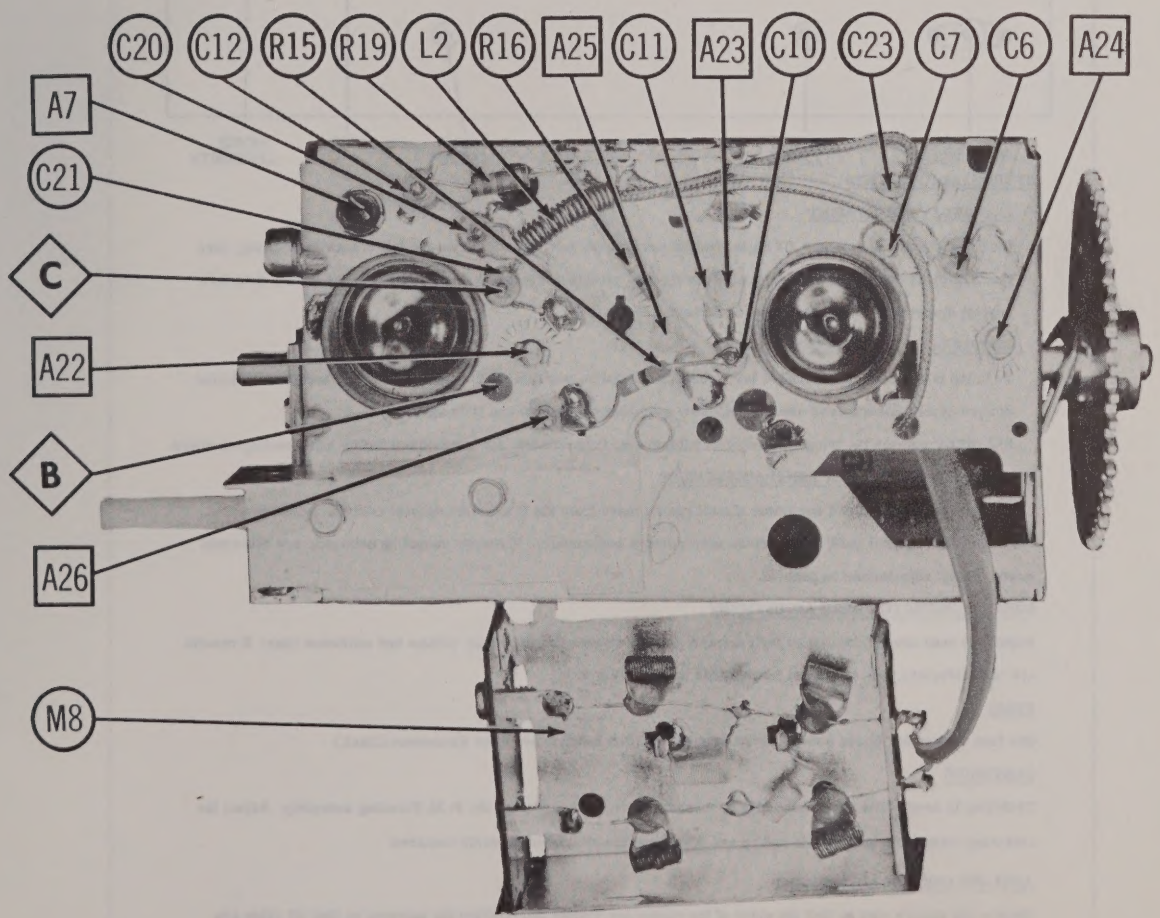
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



RF TUNER TOP VIEW

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF tuner oscillator circuit, it is necessary to remove rear cover and supply power to set. Adjustments are made thru the hole marked "Bull's Eye Adjustment" and are accessible one at a time as the selector switch is turned to each channel. (Fine tuning control must be set to the center of its range before making adjustments.) Use Zenith alignment wrench part no. 68-21 for adjustment.

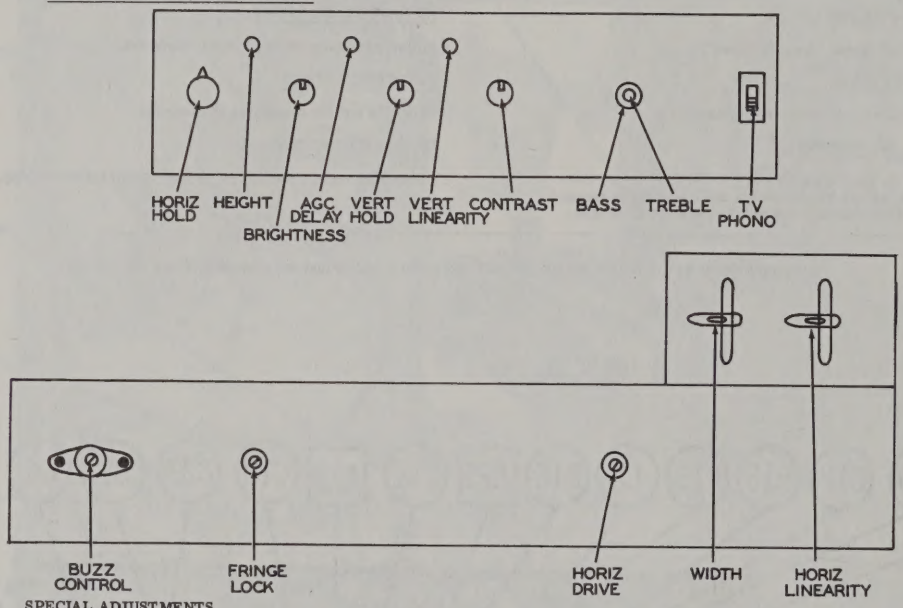
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove channel selector and on-off switch-volume control. Remove 1 wood screw from each escutcheon. Let safety glass fall forward slightly and lift out of slot at the bottom. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal, it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

AGC DELAY ADJUSTMENT

Turn the set on and tune in a TV signal and observe the picture. Starting from the full clockwise position, turn the AGC delay control counter clockwise slowly until picture distorts and buzz is heard in the sound, then turn control clockwise for clearest picture and best sound.

FRINGE LOCK ADJUSTMENT

Turn the fringe lock control to 1/4 turn from full clockwise position. Adjust the vertical and horizontal hold for picture synchronization and check stability by switching off channel and back again.

SLIGHTLY retouch the fringe lock control adjustment, if necessary, for maximum stability while testing as above.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the front panel service control. Adjust the horizontal hold control (L24) until picture synchronizes horizontally. If results cannot be obtained, see horizontal sweep circuit adjustments on page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control located on the rear apron of the chassis for maximum volume and minimum buzz. If results are unsatisfactory, see alignment instructions on pages 6 & 7.

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (For location see Tube Placement Chart.)

CENTERING

Centering is accomplished mechanically by means of a centering lever on the P. M. Focusing assembly. Adjust the centering lever from side to side and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible and position the magnets so that all sides are straight lines and the corners are at right angles. Two magnets are used.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs from under front control door.
2. Remove 8 wood screws. Remove fine tuning knob. Remove rear cover.
3. Disconnect picture tube socket, HV lead, deflection yoke socket, 2 speaker leads, tuner B±, volume control plug and tuner shield lead.
4. Remove 1 metal screw from picture tube mounting ground lead.
5. Remove 4 chassis bolts. Remove chassis.

TUNER REMOVAL

1. Remove channel selector knob.
2. Remove 2 metal screws from rear of cabinet. (Holding tuner to cabinet.)
3. Lower rear of tuner and pull out.

VOLUME CONTROL ASSEMBLY REMOVAL

1. Remove on/off-volume control knob.
2. Remove 1 metal screw from lead clamp. (Inside cabinet.)
3. Remove 1 control nut. (Outside cabinet.) Remove control.

SPEAKER REMOVAL

1. Remove 6 speaker nuts from 2 speakers. Remove 2 speakers.